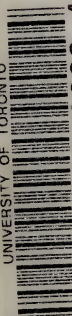


CLIMATIC TREATMENT  
OF CONSUMPTION

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THE CLIMATIC TREATMENT  
OF  
CONSUMPTION.



THE CLIMATIC TREATMENT  
OF  
CONSUMPTION

*A Contribution to Medical Climatology*

BY

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TO

JAMES CUMING, A.M., M.D., F.K.Q.C.P.,

*Professor of Medicine in the Queen's College, Belfast,*

*President of the British Medical Association (1884),*

*&c.,*

**This Volume**

IS GRATEFULLY INSCRIBED

BY HIS FRIEND AND FORMER PUPIL,

*THE AUTHOR.*



## PREFACE

THE following volume is the fruit of a personal experience of home and foreign sanatoria for consumption, which special circumstances have rendered unusually ample. Professor Jaccoud says truly, that "an immediate acquaintance with the places inhabited is an indispensable condition of really knowing them, whether with the view of teaching others, or for medical practice, since even the most complete knowledge of what has been written cannot supply the valuable information derived from personal investigation." No apology is, therefore, required for the author stating what his experience in this department has actually been.

He has made two voyages to the Australasian colonies and home. He has visited Adelaide, Melbourne, and Sydney, and has on various occasions made long journeys into the interior of Australia. He has twice visited Tasmania. He has travelled through nearly all the chief settlements and places of interest in New Zealand. He has visited Cape Colony and California.

He has spent a winter in Algeria. He has twice visited the Mediterranean. He is personally familiar with the chief health-resorts of Southern France and Northern Italy. He has visited Davos, Wiesen, St. Moritz, the Maloja, and other Swiss sanatoria. He has personal knowledge of the chief health-stations of the British Islands.

In carrying out this extensive programme of travel, the author has been brought into constant association with invalids, medical men, ordinary tourists, and residents in foreign countries, and has availed himself to the full of every opportunity of profiting by the experience of others, as well as by personal observation. Whatever be the value of the opinions he expresses, they are at least free from the reproach of being hasty generalisations founded upon scanty and imperfect data.

The general question of the relation of climate to health is one of immense practical importance, but also of immense difficulty. Douglas Powell says truly, that it is hardly yet ripe for systematic treatment. We are only on the threshold of climatological investigation, and for its exhaustive discussion, prolonged inquiry will be necessary, and more exact methods than those hitherto generally employed. Especially is there great difficulty in correctly estimating the value of all evidence tendered upon the clinical side. Meteorology is rapidly becoming an exact science, but medical climatology is even more obnoxious than other departments of therapeutics to the charge of vague-



ness and empiricism. The author believes that one great source of error (to be frequently alluded to in this volume) has been the neglect to distinguish sufficiently between the influence of climate *per se*, and its influence as affecting habit and mode of life. Rates of mortality, proportion of cures, &c., tell us little, unless such information be accompanied by full medical details, supplied on competent authority, and unless the many sources of fallacy be rigidly excluded. In many cases the evidence available consists of vague general impressions, which, although not without some value, must be received with extreme caution. How fallacious such impressions, even when almost universally prevalent, may be, is seen in the general acceptance of the very erroneous idea that breathing damp air is one of the most potent causes of consumption.

This volume makes no pretence of being a systematic and exhaustive treatise upon the climatic treatment of consumption. With the exception of a few casual allusions which could not be conveniently avoided, the author has rigidly confined himself to those countries of which he has personal knowledge, believing that by so doing he would be more likely to make a genuine contribution to the subject than if he devoted himself to the easy, but unprofitable, task of summarising the labours and observations of others. This rule has rendered necessary the omission of any detailed reference to such important sanatoria as Madeira and Egypt.

While relying mainly on personal observation, the

author has carefully consulted most of the available literature upon the subject of which he treats, and desires to acknowledge his obligations to the writings of Jaccoud, Hirsch, Hermann Weber, Burney Yeo, Douglas Powell, Theodore Williams, Sparks, J. H. Bennet, J. Addington Symonds, Marcet, Tucker Wise, Muddock, Otter, Van Dyke, Bonwick, Playfair, Trollope, &c.

The author desires to return his best thanks to Dr. William Ogle, for much valuable information upon the prevalence of consumption in the British Islands; to Mr. J. Addington Symonds and Dr. Ruedi, for many facts bearing upon the High Altitude treatment; and to Mr. John Octavius Herdman, B.A., of Trinity College (Dublin), for important assistance in the preparation of his MS. for the press.

37, VICTORIA PLACE, BELFAST,  
*April, 1887.*

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# THE CLIMATIC TREATMENT OF CONSUMPTION.

## CHAPTER I.

### THE CAUSES OF CONSUMPTION.

THE consideration of the treatment of any disease must in all cases start from a survey of the causes which tend to produce it, and the conditions under which it is known to arise. In proportion as we can remove or modify the factors which promote disease, shall we be successful in effecting its cure or favourably influencing its course and results. The basis of modern rational therapeutics is the axiom that it is unscientific to attempt to influence effects while the cause is still in operation. As well might we strive to purify a putrid stream at its junction with the ocean while the sources of its contamination remain untouched. There are, unhappily, numberless cases of disease in which the cause is beyond our reach—perhaps stretching back to prior generations, perhaps

springing from occupation and social environment which hard necessity forbids to alter—and here we may be compelled to limit our efforts to the mitigation of effects, but our success is not likely to be great while the cause remains untouched. It becomes, therefore, a question of supreme importance to determine whether the causes of consumption are such as admit of removal by the method of treatment of which we propose in this volume to deal, viz. treatment by change of climate.

The first glance at the vast mass of statistics now accessible upon the distribution of consumption shows that the relation of the disease to climate is by no means a simple one. Cold does not produce the disease ; warmth is no protection against it—in fact, temperature, as such, is without influence. Consumption is common in Greenland, common in Great Britain, common in the West Indies ; while it is rapidly exterminating the Maori of New Zealand and the Hawaiian of the Sandwich Islands. If we take Europe, about which our statistical knowledge is fairly complete, we find that in countries differing so much in mean temperature as Norway, Holland, and Italy, the average rate of mortality from consumption is practically identical—the rate in each case being about 2·5 per 1000. If we take the chief European towns, we find that Rome, Naples, and Venice suffer as much as London, Edinburgh, Amsterdam, or Christiania. In the United States we find that the mortality from consumption is practically the same in Boston,

Richmond, Charleston, and New Orleans. Clearly, then, temperature is not a material factor in the production of the disease.

As little is relative humidity a gauge of the incidence of consumption. The idea that damp *per se* is one of the main causes of its production is very deep-rooted and widespread, but it is nevertheless wholly erroneous. The Hebrides, though constantly swept by the moist breezes arising from the Gulf Stream, enjoy a remarkable immunity from consumption. The Shetlands, the Faroe Islands, and Iceland, sharing parallel meteorological conditions, are similarly exempt. The sea-air is laden with moisture, yet sea-faring peoples everywhere suffer far less from the disease than the populations of neighbouring continents. The remarkable rarity of consumption in the navy as compared with the army is a fact quite incompatible with the prevalent notion that breathing moist air predisposes to the malady. The eastern counties of England are much drier than the south-western, yet the latter have a slightly lower mortality from consumption. It is needless to multiply proofs that damp *per se* has either no influence upon the production of consumption, or else that its influence can be contravened by other factors.

Equability of temperature was formerly thought to be a vital point in the climatic environment favourable for cases of consumption, but this idea must share the fate of other prejudices on the same subject. We shall see that combined equability of temperature

and hygrometric condition is of real importance, but sudden changes of temperature do not necessarily produce consumption, as is proved by the fact that such fluctuations are common at high altitudes, while nothing is now more certain than that the dwellers in elevated regions enjoy an unequalled immunity from the ravages of the disease.

While it must be admitted that range and equality of temperature and the amount of relative humidity have individually a very slight influence in the causation of consumption, it would be a serious error to conclude that the disease is not powerfully affected by the factors which constitute climate. There is ample evidence to show that the combination of dampness and variability of temperature has a marked tendency to its production ; just as the opposite conditions of combined dryness and uniformity of temperature hinder its development. According to Hirsch "there are few countries in the world so characterised by uniformity of temperature and comparative dryness as the inland districts of Lower Egypt and the Valley of the Nile in Central and Upper Egypt, regions in which consumption is, according to all observers, very uncommon. On the other hand localities on the coast such as Alexandria, Damietta, and Port Said, with a moist climate and great range of temperature, are much subject to the disease. The same relations between the sort of climate and the number of cases are found in the interior districts of Algeria on the one hand, and the



coast-belt on the other. 'In India,' says Hunter, 'the localities specially distinguished by dryness of climate and uniformity of temperature, be they on the plains or among the hills, are least affected by consumption ; and the same relationship may be discovered in Java, in the Gulf States of America, in Guiana, and in many islands in the West Indies.'"<sup>1</sup>

Again, while a damp atmosphere has no effect in producing consumption, as proved by the relative immunity of seafarers, there is no reason to question the conclusions of Bowditch and Buchanan, that residence upon a damp soil has a notable influence in the genesis of the disease. The exceptions to this rule only prove that, in the production of a disease so varied in its origin as consumption, other factors may come in to modify the unquestionable influence of dampness of soil.

The two most striking facts in connection with the distribution of consumption are the rarity of the disease at high altitudes, and the immunity enjoyed by nomad peoples and among sparse populations. Our increasing knowledge does not enable us to assert, as was formerly done, that consumption is absolutely unknown at high elevations, but there is ample evidence to prove that it decreases relatively to altitude, and we can exclude other factors with sufficient certainty to prove that the elevation is the essential feature in this decrease. Switzerland has the lowest mortality from consumption of any Euro-

<sup>1</sup> *Handbook of Geographical and Historical Pathology*, vol. iii.

pean country, a fact which is most easily explicable as the result of the large percentage of the population who reside at considerable elevations. This probable conjecture becomes a certainty when we find that the mortality from the disease steadily declines with increase of elevation. In districts at and below 1,500 feet the ratio of deaths from consumption is 2·15 per 1,000; in districts at an elevation of from 3,000 to 4,000 feet the rate is 1·9 per 1,000, and at 5,000 feet it falls to 1·1.<sup>1</sup> While the decline is generally in relation to elevation, its uniformity is modified by the nature of the occupation followed by the masses of the people; occupation being, as we shall see presently, a most potent factor in the determination of the incidence of consumption. As the evidence (to be hereafter educed) that consumption is largely due to the crowding together of large masses of people and the adoption of an in-door life, is so overwhelming, it might naturally be conjectured that the decline in mortality at high altitudes is simply the result of sparseness of population and healthier modes of living; but fortunately we have districts in Central and South America which afford us something of the nature of an *experimentum crucis*. In Europe we have no large towns at high altitudes, and the higher the elevation the sparser in nearly every case is the population, but in Mexico and the Andes we have large cities at elevations of from 7,000 to 13,000 feet, such as Puebla (population 80,000,

<sup>1</sup> Müller, quoted by Hirsch.

elevation 7,500 feet), Mexico (population 320,000, elevation 7,500 feet), Quito (population 60,000, elevation 9,300 feet), Bogota (population 40,000, elevation 8,500 feet), Potosi (population 20,000, elevation 13,000 feet). It is clear that these cities afford us ample opportunities of determining whether the absence of consumption from the Higher Alps is really due to elevation or is merely an incidental result of sparseness of population. The evidence on the subject is fortunately clear and unambiguous. Consumption, according to all authorities, is extremely rare in the large cities above-mentioned, and in some of them, in spite of overcrowding and the evil influence of unhealthy occupations, it hardly occurs at all, except among immigrants from the lowlands. Hence we are amply justified in concluding that elevation has a powerful influence in retarding or preventing the development of consumption.

Hardly less striking are the facts which establish the immunity from the disease which is enjoyed by nomad peoples. Consumption is practically unknown among the Bedouins of Arabia, the Arab clans of Kabylia, and the wandering tribes on the Russian steppes.<sup>1</sup> That the mode of life is in these cases the essential point is proved by the fact, of which we have ample evidence, that, when these peoples relinquish their wild life of simplicity and freedom and come to reside in towns, they at once fall victims in more or less proportion to the disease

<sup>1</sup> Hirsch.

which previously they had escaped. We here touch upon the vital point round which turn all rational and scientific views regarding the causation of consumption, viz., the inter-relation of climate and habit of life, especially occupation. If we look only at the relation of climate to consumption the facts are insufficient to warrant very precise rules ; while we have seen that the noxious influence of occupation can be overcome by at least one meteorological factor, viz., elevation. Hence it is of the first importance to recognise that all sound views depend upon the correct estimate of the relative importance of these two elements. Let us now look at the influence of occupation and habit of life upon the production of consumption, with the view of hereafter determining how much of the curative influence of climatic treatment depends upon meteorological considerations, and how much upon the altered modes of life which that treatment usually involves.

There is now a vast mass of evidence which conclusively proves that consumption is comparatively rare amongst those who follow an outdoor life under normal and healthy conditions ; that it is comparatively common amongst those who live habitually indoors ; and that it attains its maximum incidence amongst those whose occupation involves prolonged confinement in a vitiated atmosphere.<sup>1</sup> Thus of 1,000

<sup>1</sup> As one of the earliest, ablest, and most eloquent upholders of this doctrine, the profession owes a lasting debt to the late Dr. Henry MacCormac, of Belfast.

fishermen who die only 108 succumb to consumption, while among grocers the mortality rises to 167, among drapers it mounts to 301, and among printers attains the truly appalling total of 461. Hence, it would appear that if a man chooses the life of a fisherman it is about ten to one that he will not contract consumption, while if he becomes a printer it is almost an even chance that he will fall a victim to that disease. That the open-air life on the one hand, and the confinement in vitiated atmosphere on the other, are the essential factors, becomes evident when further statistics on the subject are interrogated. Thus, next to fishermen the classes whose occupation involves the largest average of healthy open-air life are those engaged in the cultivation of the soil. Accordingly, we find<sup>1</sup> that the mortality from consumption per 1,000 deaths is 103 among farmers, 121 among gardeners, and 122 among agricultural labourers. Farmers thus even surpass fishermen in their exemption from consumption—a fact due no doubt to their better position and greater immunity from hardship—while gardeners and agricultural labourers only slightly fall below them. At the other end of the scale, amongst the classes which suffer most from consumption, we have cutlers, with a mortality rate of 371, file-makers, whose rate is 433, and earthenware manufacturers, of whom 473 out of every 1,000 die of consumption. If we compare different in-door occupations, we find

<sup>1</sup> Dr. William Ogle in the Supplement to the Forty-Fifth Annual Report of the Registrar-General.

that as the contamination of the air increases the death-rate from consumption rises *pari passu*. Thus, the workers engaged in the hosiery manufacture spend their time indoors, it is true, but there is nothing in the nature of the work to create any special contamination of air. Hence the mortality from consumption among this class of operatives attains only the very moderate figure of 168 per 1,000—actually less than that for the community as a whole, whose rate is 220 per 1,000—but among the operatives engaged in the woollen and cotton manufacture, which involves the inhalation of particles of dust, the rate rises to 257 and 272 respectively. The apparent exceptions to the law that the mortality from consumption is in direct ratio to the contamination of the air of respiration admit, for the most part, of a ready explanation. Thus quarrymen, although working in the open-air, have a mortality rate of 308, but here comes into play the inhalation of particles of stone-dust, which we know to be one of the most powerful predisposing causes of consumption. Cab and omnibus drivers, also working in the open air, have a mortality rate from consumption of 359, but when we observe that 1,482 of this class die from all causes, as compared with 1,000 of the general population, it seems reasonable to conclude that the excessive mortality from consumption is simply a part of the general unhealthiness of the class,—an unhealthiness due partly to exposure, partly to intemperance, and partly to the fact that these occupations are often adopted

by men who have relinquished other trades in consequence of a break-down in health. One notable exception to the general law is more difficult to explain, viz. the comparative exemption from consumption enjoyed by the workers in coal mines. Their mortality rate from this cause is only about 126, or nearly as low as that of the agricultural labourers, yet they work in a confined atmosphere and among much dust. Some high authorities have explained this immunity by the assumption that coal dust actually possesses the power of inhibiting the development of consumption.<sup>1</sup> This theory is so opposed to all our knowledge of the disease that we are inclined to look elsewhere for an explanation. Two facts may perhaps give us the clue to a more acceptable hypothesis. The work in coal mines is excessively laborious, hence it is not at all likely to be chosen by those whom hereditary tendency or acquired debility of any kind predisposes to consumption. In the second place, we know how often a sudden and marked impairment of physical vigour is the first premonition of threatening consumption; hence it is probable that many coal-miners, on becoming sensible of this diminished vitality, relinquish their laborious work, and seeking a livelihood by some lighter occupation, fail to be tabulated as miners in the mortality returns.

Of 1,000 patients treated at the Brompton Hospital for Consumption seventy per cent. had followed

<sup>1</sup> Hirt.



indoor occupations. Of ninety-eight successive cases of the disease occurring in the writer's practice, it was found on inquiry that eighty-eight had been engaged in trades involving confinement in vitiated air. Consumption ravages nunneries, prisons, seminaries, &c., and is notably more common among troops when cooped up in barracks than when engaged in active warfare or upon the march.

It is in entire accord with the principles already laid down that consumption should in nearly every case increase with the increased massing together of large populations. Thus if we take Denmark as an example, we find that in the twenty-five smallest towns the mortality is 2·1 per 1,000 inhabitants ; in the twenty-four medium towns it is 2·2 per 1,000 inhabitants ; while in the five largest towns it rises to 2·6, and in the capital, Copenhagen, to 3·0. In Holland the death-rate from consumption in the towns is to that in the open country as twenty-one to sixteen. In Switzerland in the agricultural cantons, where the population is scanty, the death-rate from consumption is only 1·1 per 1,000 inhabitants, while in the mixed cantons (partly agricultural partly industrial) the rate is 1·7, and in the purely industrial cantons 2·5 per 1,000.<sup>1</sup> In the early days of the colonisation of the United States consumption was a rare disease. It is now as common in the thickly populated and manufacturing states as it is in Great Britain, and the immunity once enjoyed by Maine

<sup>1</sup> Hirsch.



and Pennsylvania is shifted to such thinly peopled districts as Colorado and New Mexico. The only exception to the law that consumption increases with increase of population is found in the case of towns at high altitudes, elevation, as we have seen, possessing the power of counteracting the bad effects of over-crowding. The manner in which climatic treatment touches this source of consumption will be subsequently pointed out.

Consumption being pre-eminently a disease of debility, everything which tends to lower tone and impair vitality may operate as a predisposing cause. Excessive physical or mental work, worry and disappointment, alcoholic or other undue indulgence, deprivation of sunlight, improper alimentation, imperfect sanitation—each and all of these may in certain cases be operative, and climatic treatment leaves few, if any, of them unmodified.

A very important source of consumption is imperfect recovery from bronchial and pulmonary inflammations.<sup>1</sup> We have in this country an immense, an appalling number of persons who are hereditarily predisposed to consumption, and the question whether or not they will fall victims to the malady turns largely upon whether they will contract bronchitis or pneumonia, or whether, if these diseases be contracted, the recovery from them will be partial or complete.

<sup>1</sup> "A fruitful source of consumption is the tendency to catarrh of the respiratory mucous membrane."—DR. HERMANN WEBER, *Croonian Lectures*.

While there is no evidence that the climate of the British Islands has any specific influence favouring the development of the characteristic product of consumption, viz., tubercle, it is abundantly clear that it does predispose to bronchitis and pneumonia, and these diseases, arising in subjects of the consumptive diathesis, frequently form the starting point of consumption. Further, not only does the British climate predispose to bronchitis and pneumonia, but its variable character, windiness and deficiency in sunlight, frequently retard recovery from them, and render it incomplete. In such cases the patient, with weakened lung power and impaired constitutional force, is most apt to drift into consumption. In no instance is climatic treatment more urgently indicated than in these, and in none is its success more signal and complete.

There remain for consideration two causes of consumption which have been postponed until the last, as their relation to climatic treatment is less obvious than that of those which have been already enumerated. We allude to hereditary predisposition and contagion—the former, a most powerful factor; the latter, one whose importance is still a matter of controversy.

It is not easy to determine with any exactness in what proportion of cases the factor of hereditary tendency comes into play. Estimates have been made which range from one-third to two-thirds, but it is evident that peculiar difficulties embarrass any efforts

to secure precision in the results. We are compelled to rely upon the statements of unskilled observers, whose evidence is open to much question. On the one hand there is often a manifest unwillingness, especially among the wealthier classes, to acknowledge the presence of a family tendency to consumption; while on the other hand, the fact that the disease is so frequently hereditary having taken a powerful hold of the public mind, there is sometimes a tendency (most marked among the poor) to assert a family taint where none really exists, the alleged cases of consumption previously occurring among the relatives of the patient turning out on further examination to be pneumonia, bronchitis, or pleurisy. It must also be borne in mind, that even if consumption occurs in the offspring of a consumptive parent, it does not necessarily follow that the disease has been inherited. It is quite conceivable in such cases that the disease may have arisen independently in the child from the operation of causes similar to those which originally produced it in the parent, viz., foul air, unhealthy occupation, improper alimentation, or imperfect recovery from inflammatory disease of the lungs. Nevertheless, making all deductions, it remains quite certain that the hereditary factor in consumption is a most powerful one, and it is highly significant that the more minute and careful our inquiries, the more evident, as a rule, becomes its operation. The various causes of the disease which have been enumerated are undoubtedly much more

potent in those who inherit impaired vitality or enfeebled lung tissue than in the typically healthy. In cases of hereditary predisposition to consumption, climatic treatment plays a leading part in the prophylactic measures which are often adopted with such happy results. Like most of the resources of the healing art, it is much more effectual for prevention than for cure.

As regards the question of the contagiousness or consumption, it still remains *sub judice* ; and although Koch's demonstration of the invariable presence of the bacillus in tubercle has led to the subject being thoroughly reconsidered, little new light has been cast upon it. A few cases have been brought forward in which it is difficult to gainsay the operation of contagion, but such cases are infinitesimally few compared with the overwhelming number in which every opportunity for contagion is present without result. Two conclusions on the subject seem certain ; first, that contagion occurs, if at all, only among those who are closely and habitually associated, especially husband and wife ; and secondly, that where ventilation and other hygienic measures are observed, there is little, if any, ground for apprehension.

Whether the bacillus is related to tubercle as cause or accidental concomitant, is still quite uncertain. The specific lines of treatment which have been devised on the theory that its destruction is the object to be attained have not hitherto led to much result ;

but Koch's discovery has at least served the useful end of accentuating the views of the profession regarding the essential importance of a pure atmosphere in the prevention and cure of pulmonary consumption.

In the foregoing brief sketch of the causes of consumption, no attempt has been made to distinguish predisposing from determining causes. In the view of Koch and his disciples the causes which have been mainly dwelt upon, viz., overcrowding, impaired nutrition, imperfect recovery from inflammatory lung affections, &c., must be regarded solely as predisposing to the reception of the real *vera causa* of the disease—the tubercle-bacillus. The opposing school, on the other hand, regard the bacillus simply as an epiphyte, which marks the presence of tubercle but has nothing to do with its causation. The difference is, from the point of view of pathology, a radical difference, but the therapist may be pardoned if he regards it as of more theoretical interest than practical importance. Foul air, unhealthy occupations, certain climatic conditions, bad food, &c., cause consumption. Of this there can be no doubt. Whether they cause it by creating a nidus favourable for the development of the bacillus or in some other way, is of less importance than to determine how these tendencies to the disease can be most effectually counteracted. The bacillus theory has, no doubt, started the minds of experimental therapists upon a new road of inquiry, where the present paucity of

result must not discourage further investigation ; but we cannot suspend our treatment of consumption in the bare hope that the eager search for specifics may perchance result in a success which seems so much less probable than failure. We have in change of climate not a specific it is true, but a well-attested means of palliation, and sometimes of cure. The consideration of the principles and mode of application of climatic treatment can hardly be considered ill-timed even in the full noon of this, the microbe era of medical science.

#### NOTE TO CHAPTER I.

In discussing the causes of consumption the author has kept in view the profound remark of Dr. H. G. Sutton : " There are many causes of disease ; we can never say there is one cause of disease. Therefore it is exact to say, ' This disease has arisen in these conditions.' As much as possible, in thinking about pathology, endeavour to get rid of the word ' cause.' " (*Medical Pathology*, p. 3.)

This remark may be commended to those who think that the discovery of the invariable presence of a bacillus in tubercle has solved the whole question of the causation of consumption.

## CHAPTER II.

### THE GENERAL PRINCIPLES OF CLIMATIC TREATMENT.

THE common notion that the climatic treatment of consumption consists in removing the patient from a climate which causes, to one which cures, the disease is misleading and inadequate. If such were a sufficient account of this resource of therapeutics, the selection of a climate for any particular case of consumption would be a simple matter, instead of being a problem of great complexity, requiring not merely an accurate appreciation of the type and probable course of the disease, but a careful review of the habits, tastes, and previous occupation of the patient. We have seen that the British climate does not cause consumption by the direct influence of its meteorological characters, but rather by predisposing to inflammatory affections of the lungs, and by inducing an in-door life under unhealthy conditions. We have seen also that no climate gives absolute immunity from consumption, or can be relied upon infallibly to



effect a cure. Even the climate of high altitudes, which undoubtedly confers a high degree of protection upon those exposed to its influence from infancy, is, as a matter of practical experience, found to be unsuitable to many varieties of the fully-developed disease. The old notion that the air in certain regions exercised a sort of local healing influence upon the damaged lung tissue is without foundation. There is, in fact, no ideal climate for consumption ; no happy Hygeia to which the consumptive can repair and draw in healing influences with every breath. Such statements have been made, but they are fiction, not fact ; they are poetry, not science. We must recognise that the influence of climate upon consumption is indirect rather than direct, and that the effect of meteorological conditions in themselves is less than their effect as operative through the habits and modes of life.

### *General Principles.*

*a.* Climatic treatment aims at the removal of the patient from those climatic conditions which predispose to bronchial and pulmonary inflammations, and hence indirectly to consumption.

*β.* Climatic treatment aims at removing the patient from a climate which induces an in-door and sedentary life, to one where an out-door life of healthful activity may be continuously enjoyed, without hindrance from meteorological conditions.

*γ.* Climatic treatment aims at removing the patient



from a comparatively sunless and depressing climate, which impairs vitality and lowers nutrition, to a sunny and tonic climate where appetite, digestion, and sanguification undergo such augmentation as may enable the patient to shake off or hold at bay the tendency to consumptive disease.

δ. Climatic treatment aims, or should aim, at removing the patient from among crowded populations and vitiated air to some region where there is no aggregation of large masses of people, and consequently no pollution of the air of respiration.

ε. Climatic treatment aims at removing the patient from the injurious influence of a damp soil and of imperfect sanitation.

η. Lastly, climatic treatment aims at giving the patient the great boon of change—change of air, change of diet, change of scenery, change of daily routine, change involving the abandonment of many an injurious habit which has long been the secret minister of disease. It is hard to estimate how much of the immense benefit often derived from climatic treatment finds in this consideration its probable explanation.

Let us pass the above principles of climatic treatment in somewhat more detailed review.

We found that the most striking facts regarding the causation of consumption were the heavy mortality from the disease amongst in-door workers in contaminated air, and the remarkable exemption enjoyed by seafarers and nomad peoples. Hence it is safe to

conclude that pure air and an out-door life are essential for cure. It might be suggested that these necessary conditions should be secured at home without resorting to foreign travel, but it is evident that an out-door life at all seasons is impracticable in this climate, especially for the debilitated subject of consumption. He is chilled by the rawness of the air, parched by the east wind, depressed by the absence of sunshine. His irritable bronchial mucous membrane cannot bear the sudden fluctuations of temperature and hygrometric condition, and the incessant cough drives him to take refuge in heated rooms and habits of fatal invalidism. Hence appetite and nutrition suffer, and the disease pursues only too commonly its downward course. That consumption can, in certain cases, be cured even in the climate of the British Islands most physicians now admit, but it is evident that the treatment of the disease is greatly impeded by such factors as those above enumerated. The consumptive has to fight against an insidious debilitating influence affecting every organ and function, but especially those of respiration and digestion, and the weapons of his warfare are mainly those measures which tend to promote constitutional vigour, and to develop healthful activity of the breathing organs. Hence, everything which improves digestion, strengthens muscular activity, and promotes the full expansion of the lungs and the free exchange of gases in the air cells is a point gained in the struggle, while every impairment of digestive power, every decline in

muscular vigour, every breath of foul air breathed, is a point lost in the fight, which is in all cases very prolonged, and in which every item, however apparently trivial, tells in the long run. No success has attended heroic and radical measures in consumption. The disease must be combated by unwearying attention to all the little details of life which promote, and by the resolute avoidance of all that can impair, health. Climate acts mainly through its general constitutional influence upon all the functions. Putting aside for the moment the question of the influence of high altitudes, in which we can detect something deserving of the name of a specific effect, climates act indirectly by aiding the physician in carrying out the various details of a scrupulous and persevering hygiene. This is their main positive beneficial influence in consumption. Their main negative beneficial influence is in withdrawing the patient from the conditions which predispose to the disease—the chief being a damp soil, which, as we have seen, appears to have a direct influence in developing the disease ; a humid atmosphere and frequent fluctuations of temperature, which act mainly indirectly through their influence in exciting inflammatory attacks ; and those general meteorological conditions—especially absence of sunshine—which tend to depress the organism, and limit the play of healthy function.

Climates which benefit consumption are found to fulfil one or both of the following indications :—

*a.* The improvement of the local condition, which

means mainly the alleviation of the bronchial catarrh accompanying consumption, as we have seen how slight is the direct influence of meteorological states upon the local tubercular deposits.

β. The improvement of nutrition and constitutional vigour.

These two indications, while not incompatible, are by no means universally associated. A mild, equable, humid, and relaxing climate will certainly relieve cough and soothe bronchial inflammation, and no doubt by this palliation of the local irritation, may to some slight extent react favourably upon the constitutional state ; but it does not directly tend to stimulate nutrition and improve the general vigour, being rather more apt to impair appetite and incline to sedentary and inactive habits. On the other hand, a bracing and tonic climate tends to improve nutrition, but may temporarily, at least, tend also to aggravate the irritable condition of the bronchial tubes.

Again, there is often in consumption a marked nervous element, and the choice of climate is complicated by the necessity of keeping in view the fact that a climate which stimulates nutrition may also stimulate nervous action, and, if much irritability and excitement be present, the result may be an aggravation of the pyrexia, and other symptoms. Conversely, a soft and sedative climate, which is beneficial through soothing nervous irritability, may injure by impairing appetite and digestive vigour. It is thus obvious that the selection involves considerable difficulties.

When climatic treatment first came into vogue, it is certain that the first indication, viz. relief of cough and local irritations, was the main point kept in view. Hence arose the notion that warm climates were universally applicable in consumption, and hence the consumptive was uniformly sent to such climates without much regard to their probable effect upon his constitutional condition. It is now clear to us that this line of treatment is wrong in theory. The first indication in consumption is not the relief of cough, but the improvement of nutrition. The consumptive does not die of his cough; he dies of progressive wasting. We have long ago relinquished the medicinal treatment of the disease by drugs—expectorants and sedatives—which act upon the bronchial mucous membrane, and have replaced them with great advantage by artificial foods and tonics such as cod-liver oil, maltine, arsenic, and the hypophosphites. It seems clear that climatic treatment based upon the former erroneous principle must also be abandoned, and we must look less to mild and soothing air than to those meteorological conditions, whatever they may prove to be, which promote the general vigour of the organism. But we cannot leave out of account the obvious qualification that much bronchial irritation may be injurious to the constitutional state by interfering with sleep and limiting exercise; just as cough mixtures, although relegated by every wise practitioner to a very subordinate position, have nevertheless their use in

consumption, so the soothing influence of some climates is a point to be remembered in their favour.

It is, however, increasingly evident that in the selection of a climate the grand question must ever be, Is it likely to promote nutrition? Now, from the meteorological point of view, climates promote nutrition just in proportion as they allow the largest amount of exercise in the fresh air, and give abundant sunshine without excessive heat. We find that climates apparently very diverse fulfil both these conditions. The Riviera fulfils them fairly well, but the invalid can have at least as much sunshine and safe outdoor exercise amid the snows of Davos as upon the sunny shores of the Mediterranean. Life on shipboard allows an unequalled proportion of exercise in pure air, and, although the heat of the equatorial ocean is undoubtedly trying and injurious, the temperature in other regions at sea is for the most part mild and agreeable. If we compare from these two points of view Algiers with Great Britain, we get a clue to the beneficial influence of the former in cases of consumption. Our winters are so variable that it would be impossible to calculate the average number of days throughout the winter upon which outdoor exercise is possible to the invalid; but it is safe to say that the proportion would hardly be one-half. Now, at Algiers during the six winter months it is no exaggeration to say that on an average there are hardly six days upon which the invalid cannot count upon several hours of pleasant sunshine, during

which he may enjoy with safety his usual walk or drive.

Hence in selecting a climate for a consumptive the first question which occurs to us is the inquiry as regards the proportion of pleasant sunny days, on which outdoor exercise can be safely enjoyed. It is essential, also, that the heat should not be very excessive or prolonged ; but while moist heat is depressing and injurious, dry heat, such as that of the inland Australian plains, is comparatively innocuous. The combination of heat and moisture constitutes a sedative climate, while heat and dryness unite to exercise a tonic effect. Thus we advance a step further. The first desideratum is a large proportion of fine sunny weather ; the second is that the general climatic influence should be tonic rather than sedative. But in the determination of the applicability of this second point, everything turns upon the special features of the disease and the constitutional condition of the patient. We must ask ourselves whether he is in a condition to bear stimulation, or whether the activity of the morbid process or the presence of nervous irritability does not compel the selection of a climate which is mainly beneficial through soothing symptoms. To be compelled to make such a selection is often a misfortune and always a lesser good, but there is frequently no choice. We cannot stimulate unless there is some vitality on which to call, some probability that there is still left a capacity of reacting to tonic meteorological conditions. To send a nervous



debilitated patient to Davos is as great an abuse of climatic treatment, as to send another in whom the disease is almost latent and the constitutional vigour not seriously impaired, to such sedative resorts as Pau or Arcachon. This distinction must always be kept in view, and there can be no doubt that it is one very vital, not only with regard to treatment, but also to prognosis. The cases that are likely to react to tonic and stimulating climates are the cases which usually improve and are sometimes cured. The cases which demand sedative climatic conditions rarely admit of more than very temporary palliation.

A principle of climatic treatment which must be very earnestly insisted upon is that change of climate is likely to prove efficacious only when it is regarded as a preliminary step to a change in the mode of life. No error in connection with the treatment of consumption has operated more disastrously than the neglect of this rule. A clerk in London or Manchester develops consumption as the consequence of a sedentary life, hard work in impure air, and neglect of the elementary laws of food and health, aided, it may be, by hereditary predisposition. Acting on the vague impression that "Australia is good for consumption," he emigrates to Melbourne or Sydney, and immediately resumes the occupation and habits of life to which, in the first instance, he mainly owed the attack of the disease. In nine cases out of ten he dies almost as soon as if he had remained at home. But the results would be immeasurably superior if such



patients were earnestly warned that their mode of life is primarily at fault, and the British climate only secondarily and indirectly ; that the resort to such a climate as that of Australia or Tasmania is mainly beneficial because those countries afford the climatic conditions which render a life of wholesome physical activity possible at all seasons, and that their first duty on landing at the antipodes is to adopt some employment which permits a return to healthful conditions of existence. This may often be difficult, but it is imperative. The practitioner is hardly justified in advising a change of climate, unless he has some guarantee that a changed mode of life will also be adopted. Equally unsatisfactory are the results of treatment in the case of those patients of the wealthier classes who go out to the Australasian colonies to escape the winter, and spend their time in the large towns amid the questionable conditions of hotel life. Little benefit can be expected from such a course, yet it is the one adopted by the great majority of those patients who travel under the fatal delusion that a good climate is all that is necessary for the cure of their malady.

In intimate connection with the above principle comes the not less imperious rule that large centres of population are uniformly and radically ineligible as sanatoria for consumption. The evidence that the disease is essentially one of civilised life in large communities, and that its activity increases unerringly with increased density of population, is so overwhelm-

ing that it would be madness to neglect its obvious practical deductions. Yet this rule is almost invariably ignored. The necessity of securing comfortable quarters and adequate accommodation for the consumptive, the attractions of social intercourse, the desire to be near the post-office, the library, or the concert-room—all these operate so powerfully that many of the chief health resorts for consumption are unluckily large cities. To cite a few examples, we have Cannes, Nice, Malaga, Palermo, Algiers, Cape Town, the capitals of the Australian colonies, &c. No doubt the drawbacks to a residence among large aggregations of people are much mitigated by the common practice of choosing the suburbs rather than the more thickly-peopled parts, and it is safe to assert that the sanatoria mentioned would never have achieved any considerable popularity had it not been for the possession of agreeable and comparatively healthy suburbs. Yet the grounds for advising the consumptive to flee “far from the madding crowd” are very weighty, and there is happily a growing tendency for each health-resort to patronise some quiet rural spot in its vicinity to which it periodically transfers its invalid patrons. Algiers sends her patients to Hamman R’Ihra, Cape Town sends hers to Wynberg, Madeira has Oratava as a *succursale*, Sydney has Mount Victoria, and so on. It is to be apprehended, however, that this practice has sprung up without any clear conception of its scientific basis, and that the beneficial results accruing from it are

attributed simply to change of air, and not to removal from a large city to a secluded spot free from the sources of contamination which large aggregations of people necessarily involve.

Another essential principle in climatic treatment is the recognition of the gradual nature of its operation, and the slowness of the process of pulmonary and constitutional repair. In no department of practice is it more necessary to hasten slowly. There can be little doubt that many patients, after making great improvement at some foreign sanatorium, sacrifice by a premature return home what might otherwise have been a well-founded hope of recovery. In fact, "wintering abroad," which is the current interpretation of what is meant by the climatic treatment of consumption, is usually a delusion, and instead of being the rule should be the exception. There are, no doubt, cases of consumptives who keep the disease indefinitely at bay by an autumnal flight to the Riviera or Algiers, returning to the British Islands at the end of spring; but far more numerous are the instances of patients who, after benefiting temporarily by this procedure, suffer a serious relapse during their residence at home, and speedily pass beyond the stage in which treatment, climatic or otherwise, can be of any avail. Not wintering abroad, but residence abroad—for one, two, three, or more years according to the circumstances of the individual case—must be the rule, and the patient should be warned that hopes fixed on any other basis rest upon a foundation of

sand. When the consumptive insists upon returning home each spring, his home-comings in improved health and vigour are but too likely to be succeeded by one which is the prelude to the end.

If the reader will glance again at the various precautions and qualifications laid down regarding the operation and beneficial influence of climatic treatment, he will see that the ocean voyage fulfils perhaps best of all the leading indications, and is least obnoxious to the various objections. It fails generally, however, as regards the last point, viz. that its duration is too brief, and that its usually ameliorative effect has not time to develop into a perfect cure.

The operation of the climate of high altitudes has been left out of account in the preceding survey, because there is reason to believe that it depends for its effect less upon its constitutional, than its local influence. Davos does not cure consumption by its sunshine, or the purity and dryness of its air (although these conditions undoubtedly co-operate in the beneficial effect), but mainly by the rarefaction of its air, which stimulates respiratory activity, promotes healthy expansion and soundness of tissue in the lungs, and hence aids them to resist the spread of morbid deposits.

The element of change is the last item in the beneficial effect of climatic treatment. It is undoubtedly one of great importance. "*In morbis longi solum vertere conducit*," was a maxim of one of the

wisest of the ancient healers, and every observer is impressed with the striking and often almost un hoped-for benefit which accrues from change of air in chronic maladies, and above all in consumption. Its influence is not only mental, but physical, and the two favorably react, the one upon the other. New objects of interest excite to renewed vigour of mind and body. New conditions of life render old and injurious habits no longer possible. Change of diet stimulates the failing appetite, and aids the enfeebled digestion, and sleep is wooed back by the exercise of healthful activity. Hence is no doubt explained the apparent anomaly that climates which breed consumption may yet be sometimes beneficial to the consumptive traveller from other lands.

There is one aspect of the question of climatic treatment which has almost, if not altogether, escaped attention, viz., the relation of the climate where the patient acquired the disease to the one to which he repairs for its relief or cure. It is quite in harmony with much of our knowledge that something may depend upon the inter-relation of the two, and that there may be "complementary" climates—climates, namely, of which one seems adapted to cure the maladies arising in the other. It is a common experience at many sanatoria that patients from one country fare on the average much worse or much better than those from another. Here, no doubt, various factors—blood, diet, national habits, &c.—may come into play, but it is at least conceivable that

part of the explanation might be found in some interdependence of climates upon each other. Many places—Tasmania, for example—have acquired a great repute in the treatment of those morbid conditions which so commonly follow upon a prolonged residence in India. Here, again, it is not unlikely that some mutual inter-relation may exist. It is clear that, if such a relation be really a scientific fact, it does not consist in mere contrast of meteorological conditions ; otherwise we should merely have to send patients from a hot climate to a cold one, or from a dry climate to a moist one, or *vice versâ*. It is certain that no such rule can be confidently applied, without taking into account many other factors. The whole subject is scarcely yet within the range of science, and the materials for an induction do not exist, but it has much speculative interest, and at least a basis of fact upon which some solid conclusions may yet be founded. The main point for us to determine would be what climate, if any, is complementary to that of the British Islands. It is not suggested that any single climate is likely to be found which would fulfil the necessary indications, but the possible operation of some such principle as that here alluded to is worth bearing in mind in tabulating the vast and increasing mass of statistics bearing upon the results of climatic treatment.

## CHAPTER III.

### A GENERAL VIEW OF THE CHIEF SANATORIA FOR CONSUMPTION.<sup>1</sup>

NO perfectly satisfactory classification of climates has been made, or is indeed practicable. Latitude, elevation, proximity to the sea, and the prevailing winds, introduce conditions so diverse and often so conflicting that no general principle of classification is universally applicable. Latitude is, on the whole, the most important consideration ; but, while it gives us a sort of loose gauge of the average mean temperature, it affords no criterion of the degree of humidity of any given climate, and its effect is liable to be entirely contravened by elevation. Proximity to the sea gives a climate more or less of a marine quality, and tends to equability, but it is no gauge either of temperature or humidity. Elevation above the sea-level gives us no clue either to average temperature or average rainfall, as the operation of latitude

<sup>1</sup> For many of the facts contained in this chapter, the author desires to acknowledge his obligations to Hermann Weber's admirable work in Ziemssen's series.



and prevailing winds comes into play, and we have in one zone perpetual snow at 10,000 feet, and in another unchanging verdure at the same level, or extreme dryness contrasting with equally extreme humidity at corresponding elevations.<sup>1</sup>

Hence any classification of climates based on meteorological characters alone is beset with difficulties, and lays itself continually open to the embarrassments of a cross division. It would be much more serviceable in medical practice if we had a rational classification of climates based upon their physiological effect, and it has been suggested that we should divide climates into—

*A.* Tonic and Relaxing, according as they tend to increase or impair the activity of the nutritive processes, and

*B.* Stimulant and Sedative, according as they tend to excite or soothe the activity of nervous processes.

This is a tempting classification, but it will not bear strict analysis. Sea-air is usually tonic. Mountain-air is still more definitely tonic. Yet it is clear that their influence is widely different upon the organism, and that a classification which must necessarily group them together cannot be of much scientific value. It is also evident that no certain relation can be established between the effect of a climate upon the nervous system and the nutritive functions. A given climate stimulates nervous activity; it will also be likely to stimulate nutritive

<sup>1</sup> Davos and Bogota are cases in point.



activity, *if the patient can react to the nervous stimulus.*

Otherwise the nerve stimulation will lead only to restlessness, irritability, and hence to impairment of nutrition. We are here, as so often happens in medical practice, embarrassed by the individual factor in disease, and are sometimes driven to judge climates, like drugs, not by hard and fast rules, but by their proved effect in any given case.

Since a strictly logical classification is unattainable, we must rest content with the one least open to serious objection, and therefore we may divide climates into:—

1. The Oceanic Climate.
2. The Marine Climate.
3. The Climate of Deserts and Inland Plains.
4. The Climate of High Altitudes.

We omit those types of climates which are inapplicable to the case of consumption. In the succeeding portions of this work, these various climates will come under minute review. Here we can only briefly notice their general characteristics and the contrasts which they present.

1. By the Oceanic Climate is to be understood that of the high seas, only to be enjoyed in perfection on shipboard, but found approximately in the case of the oceanic islands. It differs materially from the Marine Climate, by which is to be understood the climate of the seaside, usually on the seaboard of some continent or large island. The Oceanic Climate

Above all things equable, both as regards temperature and hygrometric state, while the Marine Climate, influenced now by sea and again by land breezes, and lying as it were on the debateable territory between ocean and continent, is the scene of frequent oscillations of heat and moisture. No doubt the Marine Climate is equable, in comparison with that, say, of the great inland plains, since the fluctuations of the former have a narrow, those of the latter a very wide, range ; but the common notion that the seaside has a very stable climatic state can hardly be maintained. Its constant breeziness, and the fact that the winds come from quarters which confer upon them the most diverse characters, are sufficient to indicate that the climate of the seaside (in point of equability) falls far below that of the open ocean, where all the winds are sea-breezes, and all charged with moisture and impregnated with the same marine quality. Hence, is in large measure explained the fact which must have struck all observers, that residence at the seaside is often useless or even injurious to cases which benefit by the sea-voyage.

2. The marine sanatoria for consumption were the first to rise into popularity, and are still the most numerous class. In the British Islands we have Ventnor, Bournemouth, Torquay, Hastings, Grange Rothesay, Queenstown, and Glengarriff. On the continent of Europe are the well-known resorts Cannes, Nice, Mentone, San Remo, Bordighera, Hyères, Biarritz, Arcachon, Castellamare, Sorrento, Valencia,

## *A View of the Chief Sanatoria for Consumpi.*

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and Malaga. In Sicily we have Palermo and Catania. In Corsica there is Ajaccio. Malta also belongs to this class, while on the northern coast of Africa we have several marine sanatoria which at present enjoy considerable favour, viz. Algiers, Oran, Tangier, Mogador. Further south, Madeira and Oratava in the island of Teneriffe belong to the same category. There is no good marine sanatorium in South Africa. In Australasia the best resorts of this class are Hobart and Launceston in Tasmania, the seaports of Gippsland and the Illawarra district of New South Wales, and Napier and Nelson in New Zealand. In the Western Hemisphere we have the coast of Florida, Nassau in the Bahamas, the Bermudas, and Monterey, Santa Barbara, and San Diego in California.

It is manifest that we have here an altogether heterogeneous class of sanatoria, which illustrates well the difficulty of grouping climates according to one principle of division. The marine health-resorts enumerated represent the most various degrees of temperature and humidity, and differ profoundly in their physiological action. Inasmuch, however, as all these sanatoria are at the sea-level, and the influence of elevation does not come into play to affect temperature, their respective latitudes give us a fair gauge of their relative degrees of warmth. Among the warm resorts must be grouped the seaports of the Riviera, the Mediterranean islands, the sanatoria of northern Africa, Florida, Nassau, and the Californian ports, Madeira and Teneriffe, and the Illawarra district

Australia. The following must be reckoned as belonging to the temperate group—all the marine sanatoria in the British Islands, those of Tasmania and New Zealand. There are practically no cold marine resorts which can be recommended in consumption.

As regards humidity we find an equally wide diversity among the marine sanatoria. Some are very humid, such as Rothesay, Queenstown, Torquay, Madeira, Nelson. Some possess only moderate humidity, such as Algiers, Tangier, Ajaccio, Palermo. Others must be reckoned as comparatively dry, such as the Riviera resorts, Castellamare, Sorrento, Malaga, Valencia, Mogador, Santa Barbara. The driest marine resorts in the world are those upon the Californian coast.

The physiological action of the marine resorts may be gauged by recollecting the broad rule that the warm and humid resorts are the most relaxing, the temperate and humid resorts somewhat less relaxing, and that the dry and warm resorts are more or less tonic.

The popularity of the marine resorts, once unequalled, and still great, seems slightly receding in presence of the modern drift of medical opinion in favour of the view that they afford on the whole less favourable results in consumption than the mountain sanatoria, the dry inland resorts, and the sea-voyage. The author holds strongly that in most cases they are decidedly inferior to a prolonged residence on board the ocean-going ship. Their long-famous name, their

ample and often luxurious accommodation, and the patronage of wealth and fashion, help to maintain their present position and popularity.

### 3. The Climate of Deserts and Inland Plains.

We have examples of this variety of climate in Egypt, the interior of Algeria, the Orange Free State, the inland plains of Australia, such as the Riverina and the Darling Downs, and various districts in the western states of North America.

This is a more homogeneous group than that of the marine sanatoria, the absence of mountain and the remoteness from the ocean conferring a high degree of dryness upon all the resorts in this class. Temperature varies much with the season, and the diurnal oscillations are considerable. Dry air and cloudless skies always involve warm days and (owing to the energy of radiation) cool nights. This instability of temperature in the inland plain resorts is their chief drawback, just as their dry air is their chief recommendation. These sanatoria also possess a high degree of purity of air, which they owe to sparseness of population and the inhibitory influence exercised upon putrefactive processes by a dry atmosphere and a hot sun.

The chief difficulty in recommending the inland plains and deserts in consumption is the impossibility, in many cases, of securing adequate accommodation. The consumptive can hardly join himself to the nomad Bedouins of Arabia, or the wandering Kirghiz of the Russian steppes. Train and coach do not run

in the Sahara, nor is the hotel accommodation of the Australian bush or the American prairie likely to satisfy even the least exacting invalid. Yet we need not surrender the unquestionable advantage of dry inland and desert air on the ground of the impracticability of enjoying it in comfort. Camping out for months together is a recognised practice in the interior of Algeria, and is neither perilous nor disagreeable. The traveller who can afford to "trek" into the interior of South Africa can add pleasure and adventure to the pursuit of health. A journey in a dahabeah to the Nile cataracts is a luxurious method of securing the end in view, and life on a squatter's sheep station in the interior of Australia is at least tolerable to those who find it the means of renewed health and vigour.

#### 4. The Climate of High Altitudes.

The chief mountain sanatoria at present available in the treatment of consumption are those of the Alps, the Rocky Mountains, and the Andes. Their meteorological characters and therapeutic uses will be fully considered hereafter. At present we will only notice briefly their relation to the other classes of climate already enumerated.

The mountain resorts are the most homogeneous of all the groups of sanatoria. It is true they differ widely in such important meteorological characters as temperature and humidity, and there is a very obvious contrast between frost-bound Davos and ever-vernal Quito or Bogota; but it is becoming

increasingly probable that their one invariable quality, viz., aerial rarefaction, is also their essential feature in the treatment of disease. The law that atmospheric pressure declines uniformly with increase of elevation above the sea-level is an invariable one, and, unlike many important meteorological principles, is in no way modified by latitude. Hence, given the altitude, we know at once the tenuity of the air and the consequent increase of stimulation of the respiratory function. There can be little doubt that this abnormal activity of the pulmonary organs is the explanation of the immunity from consumption enjoyed by the dwellers at high altitudes. The lung tissue, thoroughly exercised from birth onwards, probably acquires an unwonted robustness of texture, which renders it an impervious soil for the retention of morbid deposits.<sup>1</sup>

The constitutional influence of the climate of high altitudes is in a high degree tonic and stimulating, more so than any of the climates previously considered. The stimulus to the respiratory process reacts upon the other functions, and hence circulatory digestive and nervous operations proceed with increased vigour. In order that this heightened activity of bodily function may conduce to the restoration of health, and not simply burn up the

<sup>1</sup> Hirsch. Dr. Creighton has lately argued that the increased capacity for the absorption of oxygen found in the lungs of dwellers at high altitudes may be part of the explanation of the beneficial influence of the mountain climate in consumption. (*Brit. Med. Journ.*, April 16th, 1887.)



remaining energies of an already exhausted organism, some reserve of vital force must be present, and there must be an abundant dietary and a sound hygiene. There is some evidence that, in the absence of such conditions, the stimulation of the high altitude climate may tend to the enfeeblement rather than to the invigoration of the physical energies. "Mountain anæmia"—due in all probability to the scanty food resources of secluded mountain villages—is said to exist, and it is now a familiar fact that some cases of consumption are unfavourably affected by recourse to high altitudes.

A contrast of the physiological action of the four types of climate described must be attempted, although it is evident that the materials do not exist for rendering it scientifically accurate, and every dictum on the subject must be more or less qualified by allowance for the play of individual idiosyncrasy.

First, as regards their influence upon digestive function.

#### *A. Tonic Climates—*

viz. : The High Altitude Climate.	} Decidedly
The Oceanic Climate.	
The Desert Climate.	} Less decidedly
The Dry Marine Resorts.	
	} Tonic.

#### *B. Relaxing Climates—*

viz. : The Moist Marine Resorts.

<sup>1</sup> The contrast between sea-air and mountain-air is very ably worked out by Dr. Burney Yeo in the opening chapter of his well-known manual upon "Health Resorts."



It seems somewhat paradoxical that we should have to group together as analogous in their tonic action two climates so widely dissimilar as those of High Altitudes and the Ocean, but there can be no doubt of the correctness of the classification. They differ so fundamentally in such important meteorological characteristics as atmospheric pressure, temperature, humidity, &c., that their tonic influence can hardly depend upon the same climatological factor. Probably the climate of High Altitudes is tonic mainly through the general stimulus to the organism afforded by the rarefaction of the air; while the Ocean owes its tonic influence largely to the breeziness, purity and marine quality of the air. It would be futile to attempt to determine which of these climates has the more decidedly tonic influence, as the operation of individual idiosyncrasy is here undoubtedly very strong. Possibly the Oceanic climate is the more uniformly tonic—the High Altitude climate the more powerfully tonic in special cases.

The Desert climate and the Dry Marine climate owe their tonicity mainly to the action of dry air in promoting the cutaneous secretion, and hence indirectly favouring tissue change. It is remarkable how appetite and digestive vigour are maintained in a dry climate, even although the heat be excessive, and how quickly they react to variations in humidity rather than to changes in temperature. The Australian backwoodsman consumes immense quantities of flesh meat with the thermometer at 100° in the shade,

and is unconscious of the dyspeptic troubles which would follow such indulgence in the moist heat of the tropics.

The tonic climates, while so widely contrasted from the meteorological point of view, have two characteristics in common, viz. :

*α.* Purity of the air.

*β.* Abundance of sunlight.

On the importance of these two properties in promoting healthful activity of the digestive system, it is unnecessary to dwell. No climate which is decidedly lacking in either one or the other is likely to prove permanently beneficial in consumption.

The Moist Marine resorts owe their relaxing influence partly to their humidity, which hinders cutaneous action, partly to their deficiency in sunlight, and in the case of some of them to their shelter from wind. That humidity is not in itself necessarily relaxing we have seen in the case of the Oceanic climate, but here other factors come into play.

The above analysis of the explanation of the tonic influence of certain climates and the relaxing influence of others, needs to be supplemented by allowing, first, for the action of the nervous system (a point to be dwelt upon presently), and secondly, for the mode of life which certain climates naturally induce. We cannot separate in fact, although we may in theory, the action of climate upon nervous and upon digestive function ; and in every case the occupation of the

individual is a factor which materially modifies all abstract rules.

It is obvious from many considerations previously insisted upon, that in consumption we naturally select tonic climates as a general rule of climatic treatment, and fall back upon the relaxing class only when the former are for some reason inadmissible. The keynote to treatment being the improvement of nutrition, tonic climates are as obviously indicated as tonic drugs and tonic food. The explanation by their occasional inapplicability will appear better after we have reviewed the principles which underlie the second great classification of climates from the physiological point of view.

According to their influence upon the nervous system, we divide climates into :—

- A. Stimulant Climates,  
which increase nervous action
- B. Sedative Climates,  
which diminish nervous action.

Of the former class we have—

1. The Climate of High Altitudes.
2. The Climate of Dry Marine Resorts.
3. The Climate of the Desert.

Of the latter or sedative class we have—

1. The Climate of the Moist Marine Resorts.
2. The Climate of the Ocean.

It is thus evident that the two classifications do not tally, and that the action of climate upon nervous action is not identical with that upon the digestive functions.

The climate of High Altitudes is even more decidedly stimulant than tonic ; in fact this is its most important and invariable physiological action. Its tendency is to be tonic, but this tendency may be contravened by the individual factor, or by the disturbing influence of disease. But no such exception exists as regards its stimulant action ; this is invariable, no matter what the peculiarities of the individual or the state of disease present. If the stimulating tendency be in excess, or if the individual susceptibility be extreme, nervous irritability results, with the usual symptoms of excitement or depression, insomnia, irregularity of the circulation, and impaired digestive vigour. The stimulating action of the High Altitude climate is the direct result of the rarefaction of the air.

The Dry Marine resorts and the Desert sanatoria owe their stimulating properties to the dryness of the air and the abundance of sunshine. The drier the air and the more brilliant the light the greater is the stimulation. Any increase of humidity or any local conditions favouring shelter from sunlight and sun-heat tend to diminish the stimulating action.

The climate of the Moist Marine resorts such as Torquay or Madeira, has a decidedly sedative action, soothing nervous irritability, nervous cough, &c.

The climate of the Ocean is somewhat doubtful in its effects upon the nervous system, but in the main is rather sedative than stimulant. Insomnia and other nervous troubles are frequent at the commencement of long sea voyages, but are probably due rather to the novel conditions of life on shipboard, unusual noises at night, the excitement of separation from home and friends, &c., than to marine influences. After the first few weeks at sea, sound sleep and other signs of quiet nervous action are the rule. Here appears another of the many points of contrast between two of the most efficient climates applicable in consumption, viz., that of the Ocean and that of High Altitudes. Both are eminently tonic; but the latter is highly stimulant, the former very feebly stimulant or even sedative. The obvious deductions from this distinction need not now be dwelt upon.

The weakness of any physiological classification of climates consists in the fact that no two sanatoria possess identical conditions, and that one meteorological factor may modify or annul the effect of another. In the previous survey no account has been taken of the very important feature of wind, yet it must not be overlooked. A windy climate is *pro tanto* a stimulating one, yet curiously enough the most stimulating climate of all, viz., that of High Altitudes, is also the least windy. Here the stimulation is otherwise explained. It must be insisted that windy climates are rarely suitable in consumption, and that their stimulating action can only very rarely be

turned to account. Windiness is one of the gravest drawbacks to some sanatoria, otherwise excellent, such as Biarritz, the Riviera, the Engadine, &c.

It is evident from the foregoing considerations, that we have in climates almost as varied a resource as in drugs, and that the basis of all scientific application of their properties lies in an accurate knowledge of their physiological action and the correct adjustment of this action to the individual constitution and the special types of disease.

In the following chapters the author deals exclusively with those sanatoria and forms of climatic treatment of which he has had personal experience. Both on the ground of novelty and intrinsic importance the High Altitude sanatoria may fairly be accorded precedence; the sea-voyage follows as possessing high and undisputed value; Australia and its neighbouring colonies come next as the natural goal of the sea-voyage, and California, the Cape, Algeria, Southern France and the British sanatoria, complete the volume.

## CHAPTER IV.

### THE MOUNTAIN SANATORIA.<sup>1</sup>

THE most notable advance in the treatment of consumption achieved during the present century has unquestionably been the rapid progress in public and professional favour of the High Altitude sanatoria. Not only are the results achieved at Davos and elsewhere excellent in themselves, but they have reacted with telling effect upon many of the erroneous notions regarding consumption, which former generations adopted and practised with such fatal consequences. It was long believed that cold was injurious to consumptives, and heat beneficial; that exercise was perilous and perfect rest necessary to guard against hæmorrhage; that once the disease had declared itself business and pleasure must be abandoned and a life of seclusion and invalidism enjoined. Hence the consumptive was condemned to confinement in hot

<sup>1</sup> The substance of this chapter has already appeared in the *Lancet* as a series of articles upon "The High Altitude Treatment."



rooms, to mental and physical inactivity, to a course of medicines which soothed his cough at the cost of impairing appetite and lowering nutrition. With our present knowledge of the disease we cannot wonder that such fatally erroneous ideas had their natural issue in hopelessness and death. The experience gathered at Davos has completely refuted all these baseless fallacies. It has shown that even extreme cold can be readily tolerated by the consumptive, that skating, tobogganning, and other forms of vigorous exercise may, with proper precautions, be undertaken not only with impunity, but with decided advantage ; and, in short, that the best way to fight tubercle is, to treat it, not as an inflammatory process allied to pneumonia or bronchitis, but as a product of debility, to be resisted by tonic and hardening methods, and by such measures as tend to promote the nutrition of the body. Whatever be ultimately established as the proper function and area of the High Altitude treatment—and the present danger is no longer that it should be contemptuously rejected, but rather that it should be indiscriminately applied—this reversal of the old traditions regarding consumption is a solid gain which no future investigation is at all likely to destroy.

The mountain climate is obviously incapable of precise definition, the character of such climates varying with latitude and elevation. If we take the prevailing flora as a gauge of meteorological conditions, we find a parity of vegetation now at 2,000,



now at 5,000, now at 8,000 feet. At the well-known sanatorium Görbersdorf in Silesia, standing at an altitude of 1,800 feet, we find a type of vegetation similar to that which is present on the Alps between the elevations of 4,000 and 5,000 feet—a comparatively slight difference of latitude thus counterbalancing a considerable difference of altitude. On the Alps in latitude  $45^{\circ}$  N. the lower limit of perpetual snow is about 9,000 feet, but in latitude  $28^{\circ}$  N. snow seldom rests long upon the towering peak of Teneriffe, although it pierces the clouds to a height of 12,000 feet. Precise rules are obviously impracticable, but for therapeutic purposes it is usually laid down that in the latitude of the British Islands we do not get the characteristic effects of altitude upon disease until an elevation of from 1,500 to 2,000 feet is reached. In the Alps this limit is raised to from 5,000 to 6,000 feet, and in equatorial regions to from 9,000 to 12,000 feet. Görbersdorf in Silesia (1,800 feet), Davos in the Alps (5,124 feet), and Bogota in the Andes (9,000 feet), may be taken as representing the three types of mountain climates. We have no mountain resort, properly so-called, within the limits of the British Islands, *i.e.* no resort where the most distinctive quality of mountain air—*viz.* rarefaction—is present in sufficient degree to constitute a definite therapeutic effect.

The characteristics of mountain climates, which are fairly constant, are as follows: Increased rarefaction, directly proportionate to the elevation; great purity

of air and freedom from organic contamination ; much ozone ; free solar radiation, abundance of light, and freedom from fog. Humidity is highly variable. Many of the lower plateaux of the Alps are enveloped in a constant vapour bath, while in the upper Alps, during the winter season, rain is almost unknown, snow is comparatively rare, and the air is so intensely dry that putrefaction is almost wholly arrested. The humidity of mountain resorts depends mainly on the character and direction of the prevailing winds and upon local configuration. Just as the ocean is the great rain-giver, so mountains are the great rain-attractors. But as temperature decreases with altitude, and as the capacity of the air for holding moisture in suspension depends upon its temperature and declines as temperature declines, the tendency of mountain climates is towards dryness rather than humidity. Mountains are the cause of copious rainfall in places in their immediate neighbourhood, but in many cases they are themselves remarkable for their intensely dry atmosphere.

Fog, again, is a variable element in mountain climates. It tends to hang about the lower ranges, but above the fog-zone a brilliant, almost cloudless, sky is the rule.

Wind is also variable, and dependent upon other conditions than those of altitude. It is inversely proportionate to the amount of local shelter ; hence mountain resorts for consumption are selected largely for the possession of this valuable attribute.

Temperature naturally varies according to the ratio of elevation and latitude, but is always lower on the mountains than upon the adjacent lowlands. At Davos the mercury frequently falls far below zero, while at Bogota the mean temperature is  $57^{\circ}$ , and the variations are trivial. At the former sanatorium the winter is characterised by the prevalence of frost, snow, and severe cold; at the latter the conditions are those of perpetual mild, humid spring.

The list of mountain sanatoria is already large and grows apace. The three chief regions are the Alps—including the well-known resorts Davos, Wiesen, St. Moritz, and the Maloja—the Rocky Mountains with Manitou, Denver, and Colorado Springs, and the Andes with Bogota, Quito, Jauja, Huancayo, and Arequipa. The writer's personal experience being confined to the Alpine sanatoria, he will deal mainly with them. In addition to the above health resorts there are many others of more or less altitude, which owe their utility, in part at least, to their elevation. Of these may be mentioned Görbersdorf, in Silesia (1,800 feet), Hammam R'Ihra, in Algeria (2,110 feet), and Mount Victoria, in New South Wales (4,000 feet).

Among the high altitude sanatoria of the Alps, Davos is still *facile princeps*. It was the reputation acquired by this little Alpine village which first gave the impetus in Europe to the mountain treatment of consumption, and it still retains its early popularity and pre-eminence over similar health resorts. Twenty years ago Davos was one of the most secluded valleys

in the Alps, with a population of barely one hundred souls, rarely or never visited by tourists, who found little to attract them in its somewhat sombre scenery. Now the valley boasts a winter population of 3,000 (nearly one-half of whom are invalids), six or seven first class hotels and numerous smaller ones, and some nine or ten resident medical practitioners. Its merits as a sanatoria were discovered by a German physician, while it owed its introduction to the British public to the writings of Mr. John Addington Symonds, the eminent critic and poet. Its growth has been rapid and, in the opinion of some competent authorities, it cannot proceed any longer unchecked without the inevitable forfeit of that perfect purity of the air to which Davos undoubtedly owes no small portion of its fame.

The chief features of the climate of Davos are aerial rarefaction, great purity of the atmosphere, low relative humidity, coldness of the air with much brilliant sunshine and a high range of sun-heat, and comparative immunity from wind, fog and miasmal emanations. These characteristics are more or less common to all the high Alpine resorts, but it is to its admirably sheltered position and the consequent stillness of the atmosphere that Davos owes its indisputable pre-eminence over rival health stations. The valley, while singularly destitute of the Alpine charm of scenery, is well adapted to the needs of the consumptive in this regard. During his winter sojourn he must have sunshine and shelter,

and it is obvious that the two conditions are to a certain extent incompatible. An open valley like the Engadine is sure to be wind-swept, while a deeply-secluded valley will lack the essential *quantum* of sunshine. Davos admirably fulfils the necessary mean between undue exposure and excessive shelter. The valley is protected on the north by the elevation of the Davos-Kulm, and on the south it terminates in the narrow and tortuous gorge of the Landwasser, so that any strong valley current of air is impossible. While thus protected from wind, Davos receives a large amount of sunshine, owing to the fact that the valley lies open—varying in breadth from half-a-mile to a mile—and the surrounding mountains are neither very lofty nor do they form a continuous investment. The prevalence of sunshine during winter in the higher Alps was unknown to a former generation of writers who, reasoning from the false analogy of other latitudes, assumed that the prevailing conditions must be those of fog and sunlessness. The summit of Ben Nevis may be constantly enshrouded in cloud during winter, but it is far otherwise at Davos. During the invalid season fog is almost unknown, rain is most rare, cloud is conspicuously absent,<sup>1</sup> and with the exception of an occasional snowfall, each day in favourable years is a continuous spell of brilliant sunshine; even in the short midwinter days

<sup>1</sup> In a letter to the author, dated Davos, February 10th, 1887, Mr. Symonds says: "We have had more than four weeks without a cloud by day or night."

Davos getting an average of six hours sunshine daily, as much as the invalid can safely reckon upon even on the sunny shores of the Riviera. It may seem almost incredible that with the thermometer below freezing-point in the shade, patients should sit for hours upon an exposed balcony with perfect impunity, that they should require sunshades although clothed in furs, and actually suffer from heat, while the breath freezes upon the moustache, yet such are the seeming anomalies of Davos. It shows how fallacious it is to transfer to one climate the ideas borrowed from experience of another. The explanation is to be found in the dry air which transmits without absorbing, the solar rays, so that the patient's skin receives the full glow of the sun, although the air in contact with his body may be below freezing-point. It is evident that if he be well protected from the contact of cold air, he may enjoy abundance of heat while all around is wrapped in snow and ice. In Greenland the pitch melts upon the ships while the thermometer in the shade registers many degrees of frost—an illustration of the same physical law. It is also important to recollect that dry air, being a bad conductor of heat, does not tend to abstract much warmth from the surface of the body. In order that the invalid may benefit from these peculiar meteorological conditions, one thing is necessary viz., that the air be perfectly still, inasmuch as aerial currents at the low temperature usually prevailing would necessarily be extremely cold. Fortunately in

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the valley of Davos, during the winter, profound calm is the rule. Day after day, even week after week, often passes with barely a breath to stir the pines or divert the perpendicular columns of smoke. Nature hibernates and enjoys intense repose, while the brilliant sunshine, the cloudless expanse of azure, and the white robe of snow investing peak and valley, combine to produce a scene of rare and novel beauty. Such is Davos at its best. At its worst it can be very disagreeable indeed, but to be just we must take a fair average. As the weather at Davos is still a matter of controversy, the following figures (based upon an average of three years) may be quoted as affording a more accurate conception than can be given by mere general statements.

1. Average number of cloudless and sunny days :—

October 11.	December 16.	February 16.
November 15.	January 19.	March 17.

2. Average number of days of alternate cloud and sunshine :—

October 12.	December 8.	February 8.
November 7.	January 9.	March 8.

3. Average number of windless days :—

October 14.	December 25.	February 17.
November 22.	January 25.	March 12.



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### 4. Average number of cloudy days :—

October	}	Average less than one each.
December		
January		
February		None.
November		Two.
March		One.

### 5. Average number of wet and snowy days :—

October 2.	December 1.	February 2.
November 3.	January 2.	March 2.

### 6. Average number of days on which some snow or rain fell :—

October 5.	December 5.	February 2.
November 4.	January 1.	March 4.

A brief glance at these tables will show that about fifteen days in each winter month are perfectly sunny and cloudless, that about nineteen in each month are perfectly free from wind, and that the average of wet cloudy and really bad days is barely two. Making all due deductions for exceptionally bad seasons, for excessive or deficient snowfall, and for unduly frequent visitations of the Föhn, one may fairly ask where is the sanatorium that can show a higher average of favourable weather?

The rarefaction of the air—probably the most important feature in the climate of Davos from the therapeutic point of view—need only be mentioned. The barometer ranges from twenty-four to twenty-five inches.



The purity of the air—second only to rarefaction in therapeutic importance—is very marked at high altitudes, owing to sparseness of population, the absence of the usual sources of air contamination, and the influence of cold in checking putrefactive changes. The rapidly increasing ingress of invalids to Davos, and the proportionate augmentation of hotels, houses, &c., undoubtedly threatens serious danger to this aerial purity. This leads us to consider the most burning of the many controversies raging at Davos, viz., the question of overcrowding. Mr. Symonds gave the first warning on this subject some years ago, and his views are shared by Dr. Ruedi, Mr. Arthur William Waters and other high authorities. At first sight, the visitor to Davos is inclined to be sceptical about the dangers of overcrowding in a valley twenty miles long by half a mile wide, whose population has reached only the figure of 3,000. But when he has fully appreciated the peculiarities of the Davos climate, he begins to realise that such fears are far from groundless. The reasons why, with a comparatively scanty population, Davos is threatened with the evils of overcrowding, are as follows :—

1. The stagnation of the air during the winter, and the consequent accumulation of the products of combustion, putrefactive particles, &c.
2. The large amount of fuel consumed owing to the cold.
3. The nature of the invalid cases, every consumptive being a focus of air-contamination.

4. The difficulty of securing thorough ventilation owing to the cold.

5. The pulverisation of sputum owing to the dryness of the atmosphere, and its consequent dispersion through the air.

6. The presence of numerous cattle and the accumulation of their *dejecta*.

Having glanced at the various meteorological conditions prevailing at Davos, let us now consider their special applicability to the case of consumption. There can be no doubt that the most essential of all is the rarefaction of the air—the only important character common to all mountain sanatoria of proved efficacy. The first effect of rarefied air upon the lungs is to provoke deep and full respirations, thus promoting pulmonary expansion and affording a favourable condition for the absorption of morbid deposits. It is evident that such respiratory activity might be expected to exercise a beneficial influence upon consumption. The fact that tubercle has by preference its seat in the apices, the least functionally active part of the lungs, is a hint to us that in the treatment of the disease we should seek to promote activity and not quiescence of the pulmonary organs. The respiratory vigour, excited by the rarefaction of the air, usually exhibits itself in marked expansion of the thorax. Dr. Ruedi reports to the writer that of 600 consumptives under his care at Davos, expansion of the thorax took place in no less than 584.

As regards the importance of purity of the air—the second great characteristic of the climate of Davos—its influence in checking the genesis of consumption, and of favourably influencing the course of the developed disease, has already been so fully dwelt upon that it is sufficient here merely to allude to it.

The dryness of the air is important as tending to check unhealthy discharges, and to prevent the inflammatory complications which might otherwise arise from the prevailing low temperatures.

The cold promotes appetite, and tempts to the practice of those vigorous outdoor games to which Davos owes much. Skating, sleighing, and tobogganning are among the most favourite amusements, and under proper supervision are likely powerfully to augment the general tonic influence of the climate. That they should not be too freely indulged in by those who are much debilitated, by those who have feeble circulatory power, or who are prone to hæmorrhage, are obvious rules, the neglect of which has sometimes brought the mode of life adopted at Davos into undeserved disrepute. It is to the practice of such games that we must in part attribute the fact that almost all invalids, except the most prostrate and utterly hopeless cases, profess to enjoy the Davos life. One encounters in the hotels not a few persons in perfect health, also, who, having once visited the high altitude resorts, return again year after year to join in their pleasures, and to quaff fresh

draughts of that subtle intoxicant, the air of the Higher Alps.

The large amount of sunshine enjoyed at Davos is important to the consumptive as affording facilities for outdoor exercise, stimulating sanguification, and improving nervous tone.

Enough has been said to prove that the High Altitude treatment of consumption is not a mere arbitrary innovation, but rests upon a solid substratum of fact, and that its utility is explicable on the lines of ascertained knowledge. When we come to determine the classes of patients for whom this method of treatment is suitable we are upon less secure ground, inasmuch as the treatment is still comparatively novel, and the facts already made public are scarcely sufficient for establishing a secure and comprehensive induction. Nevertheless every year now adds abundant fresh data, and it is much to be desired that the profession should be made acquainted with the rich harvest of clinical experience now being gathered at Davos and elsewhere.

In approaching this question one obvious error must be pointed out *in limine*. Some writers fail to distinguish with sufficient precision between cases that do badly at Davos, and those which do badly anywhere and everywhere. It adds nothing to our knowledge to inform us that cases of consumption complicated with albuminuria do badly at Davos, for we know that such cases are beyond the reach

of all climatic treatment. As little does it help towards the clear understanding of the special function of the Alpine sanatoria to say that cases with laryngeal ulceration fare badly there, as we may pertinently ask, Where do they fare otherwise than badly? To turn to the positive side, it affords us little practical guidance to inform us that the cases for Davos are those of limited chronic disease, without well-marked hereditary predisposition, where there is immunity from visceral complications and the retention of fair digestive and circulatory vigour, because such cases usually respond well to any climate of which the meteorological conditions are more favourable to health than those amidst which the disease was contracted. We must come to closer quarters with the problem, and avoid those generalities which are part of the general prognosis of consumption. What we want to determine is, *first*, In what cases of disease may Davos be expected to prove decidedly more efficacious than Mentone, Algiers, Madeira, or Egypt? *Secondly*, What cases are likely to be injuriously affected by the peculiar features of the climate of High Altitudes? Let us look first at the latter question as admitting of a readier and more definite answer.

All authorities are agreed that patients with weak circulation should on no account be sent to the mountains. Circulatory weakness is the first and most peremptory contra-indication against the adoption of the High Altitude treatment, and the reasons

for this rule are too obvious to need demonstration. Organic heart-disease, such as valvulitis, is not an absolute contra-indication. The main point is the integrity of the cardiac muscle, and the degree of efficiency with which the circulation is maintained. A patient with valvular disease, but in whom compensation is adequate, may be freely recommended to try Davos; but, on the other hand, a case in which there is no actual cardiac disease, but marked functional weakness of the circulatory apparatus, should be prohibited from resorting to the mountains. Fatty degeneration of the heart, also, definitely precludes the High Altitude treatment.

The next most important contra-indication is the presence of senile change. No doubt this point should be viewed in close connection with the former one, since arterial degeneration is probably the main reason why elderly patients fare ill among the Alps. To this must be added that the old are apt to be depressed by cold, and are often either unable or unwilling to practise the vigorous out-door exercises, without which satisfactory progress at Davos is hardly possible.

Gout and rheumatism are contra-indications which need only be mentioned in order that their importance may be realised. Organic nerve disease and hysteria are also usually prohibitive to the adoption of the High Altitude treatment, no doubt because of the highly stimulating properties of the Alpine air.

Cases in which dyspepsia is a prominent symptom cannot be sent to Davos without some misgivings, although there are types and degrees of dyspepsia which do not constitute a definite contra-indication. Almost every case of consumption (in fact, every case) is sooner or later complicated with digestive troubles, but it is only when these are pronounced and intractable that recourse to Davos is out of the question. It has been remarked that patients with fluxive diarrhœa often obtain relief from this troublesome symptom on repairing to the mountains.

Sleeplessness is occasionally troublesome at Davos at the commencement of residence there, but it almost invariably passes off, and only very rarely is sufficiently obstinate to compel departure.

The last contra-indication to be considered is that peculiar condition known to German authorities as the *eretische constitution*, or the erethic diathesis. It is impossible to define exactly what is meant by this term but every physician has a fairly definite conception of what is included under it. Probably the main feature in this constitution is some species of nervous and circulatory instability. But whatever be the exact definition of the erethic constitution—and every observer must form his own conception of it—its presence is a definite contra-indication against the adoption of the High Altitude treatment. When such cases resort to Davos they become restless and excitable, sleep is disturbed, appetite is capricious, and



the pulse is flying and of low tension. They do much better on the inland plains or on ship-board.

Let us now look at the converse side of the question, and inquire to what classes of the malady the mountain treatment is specially applicable. In the first place, there can no longer be much doubt that in a certain proportion of cases of early consumption with limited disease and slight constitutional involvement; the High Altitudes are not only palliative, but curative. The Davos doctors claim from ten to fifteen per cent. of cures, and any one who visits the valley will find numerous individuals who arrived there with fully-declared consumption, but who are now either restored to complete vigour or at least succeed in keeping the destroyer indefinitely at bay. Some of these convalescents return to the lowlands and resume their avocations with safety, but many others find themselves compelled to settle permanently at Davos. It is a point worthy of the most careful study what proportion of the alleged recoveries are absolute cures, and what proportion are contingent upon the convalescent remaining in the climatic and hygienic conditions in which the cure was effected. The latter will undoubtedly be found to constitute a large percentage.

Apart from cure, the cases of marked improvement are very numerous, but statistics on such a question are apt to be fallacious. Inquiries instituted at Davos definitely prove that instances of patients resorting thither, and leaving in a short time without benefit, are exceptional. No doubt a considerable proportion



remain to die, and the Davos cemetery is filling rapidly, but this must happen until medical knowledge is sufficiently exact to enable us to exclude from the mountain treatment all those cases for which it is unsuitable.

Cases of consumption which exhibit a "torpid reaction" are the most adapted to Davos. In other words, patients should not be sent thither unless they are capable of supporting and responding to the highly stimulating climatic conditions which there prevail. This is a very obvious consideration, but, next to indications afforded by the circulation, it is the most important clue to the judicious selection of cases. No more vital principle runs through all medical practice than the determination whether any given case will bear stimulation or must be treated with sedative measures. On the correct estimation of this point depends our success in dealing with a wide range of affections, but in no disease must this principle be more rigorously kept in view than in consumption. It is only when we are satisfied that some power of reaction is left that the adoption of the High Altitude treatment can enter into our calculations.

Dr. Ruedi has remarked that cases of consumption, where there are profuse hæmorrhages with slight evidence of disease, do remarkably well at Davos.<sup>1</sup>

<sup>1</sup> The general question of the High Altitude treatment in cases of ordinary consumption, characterised by hæmorrhage, is subsequently considered.

Such cases often respond well to treatment elsewhere also.

Old pleurisies and unresolved pneumonias which threaten to become tubercular, constitute perhaps the class of case in which the climate of High Altitudes has achieved its most striking successes. They undoubtedly do marvellously well at Davos—a fact which is not surprising when we reflect that the aerial rarefaction promotes lung expansion and the general climatic conditions are tonic and stimulant.

As a general rule a certain amount of constitutional vigour is necessary to enable a patient to withstand the cold of the Alpine climate and to respond to its stimulating action. On this subject, however, any hard-and-fast rule would be fallacious, as undoubtedly some patients who arrive in a state of marked prostration subsequently rally and benefit by a residence at Davos. Nevertheless, there can be no more pernicious error than to suppose that the air of the higher Alps is any specific for advanced consumption. No doubt many patients, in their eager adoption of a novel and hopeful line of treatment, resort to Davos with an altogether exaggerated estimate of the virtues of the climate. They expect to be cured and cured quickly. Hence we are not surprised at being told that among invalids at Davos a certain tone of disappointment is frequently perceptible after a few months' residence. They are better indeed—at least the great majority—but the improvement is slow and complete recovery is still a long way off. Patients who are about to try

climatic treatment must invariably be warned of the essential slowness of the reparative processes in consumption, of the need for a prolonged residence in a climate that has been proved to be beneficial, and this rule applies as stringently to the High Altitudes as to other climates. Patients must also be instructed that the virtues of the Alpine climate are no safeguard against the evil consequences which will certainly result from an imprudent mode of life or the neglect of those precautions which the consumptive can never safely intermit. No one can doubt that Davos owed much of its early fame to simplicity of manners and immunity from many of the temptations of life. It has now shared the usual fate of the popular health-resort, and advertises its concerts, theatricals, dances, and similar meretricious attractions—as if the consumptive should seek such pleasures, rather than regard them as a snare to be studiously shunned.

The accommodation at Davos is in the main surprisingly good. The hotels most frequented by the English visitors are the Belvedere, the Angleterre, the Victoria, and the Buol—all excellent, and the food supply leaves little to be desired. In the depth of winter fresh green vegetables are somewhat scarce, but in other particulars the hotels are as well provided as in the most favoured resorts for consumptives.

The drawbacks to life at Davos are neither so numerous nor so grave as might at first sight appear.

Patients as a rule find their existence there at least as tolerable as at most sanatoria, and the glare from the snow, frost-bite, and similar terrors conjured up by those who have no practical experience of the climate are either trivial or entirely visionary. The most real drawback is probably the necessity for spending so large a proportion of time in artificially heated apartments. The days are short, and although the hardier patients venture out with impunity after sundown, there are many who are necessarily confined to their apartments for at least eighteen or nineteen hours out of the twenty-four. This is a genuine evil of no slight magnitude, and its import becomes still more serious if we accept the teaching of some authorities regarding the bad effects of heating rooms by stoves—the universal method in vogue at Davos.

Do hopeless cases of consumption spend the remnant of their days more easily at Davos than elsewhere? We can only answer, *cela dépend*. There is no rule. Some patients, who have tried all resorts, deliberately go to Davos in order to die as comfortably as possible; but probably a still larger number of moribund cases experience some relief on removal to the softer air of Mentone or Madeira. It seems natural that the dying should seek soothing and sedative climatic conditions rather than those that are pre-eminently stimulant.

An important question arises whether patients should go direct to Davos or break the journey at some of the intermediate stations. Probably, if the

circulation is vigorous and the nervous system fairly sound, a journey direct is the less of two evils ; but if there is any reason to dread cardiac failure or severe nervous disturbance, the need for a halt at some intermediate point is imperative. In such cases the journey may be broken at Ragatz or Klosters, or Coire may be selected if the patient travel by the Landwasser route. He should not stop either at Landquart or Küblis, as the accommodation is inadequate. Some German authorities urge that, whatever practice be adopted on the upward journey, there should be no exception to the rule of making the descent to the plains by several stages.

Patients begin to arrive at Davos in October or earlier, and by the end of November the winter colony is assembled. It is one of the moot points when the patient should arrive. It used to be taught that it was a mistake to arrive before the valley was fully invested with its winter robe of snow—a rule which would delay arrival until the third or fourth week in November or later—but the Davos doctors hold that the earlier the patient arrives the better—September being a good month—and that the more serious the case the greater is the need for a timely arrival. The object of arriving in the valley before the advent of winter is to enable the invalid to become habituated to the strain involved in the rarefaction of the air, before being called to bear the additional strain of cold.

Having dealt fully with Davos, a brief notice of the

other Alpine sanatoria must suffice. In the Davos valley we have, in addition to Davos-Platz, the little villages of Davos-Dörfli and Frauenkirch. Their climatic conditions do not differ materially from those of the parent sanatorium, and as the evils of overcrowding become more manifest, they are likely to draw off a considerable section of the winter visitants from Davos-Platz.

Eleven miles from Davos, on a picturesque slope overhanging the deep gorge of the Landwasser, and commanding a prospect of grand snowy peaks, is Wiesen. Its elevation being several hundred feet lower than that of Davos, it has a milder climate and a shorter winter. Its situation is somewhat more open than that of Davos, but the atmospheric calm is hardly less perfect. It possesses all that Alpine charm of scenery which Davos so conspicuously lacks, and ample accommodation is afforded by two good hotels. Wiesen has not yet been extensively patronised, but in the winter of 1885-86 it had thirty or forty invalids, and the results are said to have been satisfactory. There seems every reason to think that it is capable of developing into an admirable sanatorium, and probably its *rôle* will be to suit certain classes of patients who cannot tolerate Davos. The lower elevation and milder climate naturally suggest that in certain doubtful cases where circulatory weakness or nervous debility renders a resort to high altitudes a doubtful measure, Wiesen should be tried before Davos. If it fail, less harm

will have been done than would have attended a recourse to the more stimulating sanatorium, while if it succeed the patient may then try Davos either at the end of the winter or in the following season. The chief drawback to Wiesen (if drawback it must be called) is the extreme seclusion and the lack of all society. The village is one of the smallest and poorest in Switzerland, and the invalids in the hotels are thrown entirely on their own resources. If this tends to *ennui*, it at least removes temptation to amusements and pleasures of doubtful prudence for the invalid. Wiesen is approached *viâ* Chur, from which it is twenty-four miles distant.

The valley of the Engadine, long celebrated for its magnificent scenery and bracing air, has in recent years put in its claim to rival Davos as a winter sanatorium. It has four stations, viz., St. Moritz, the Maloja, Pontresina, and Samaden, but we may confine our attention to the two former, as neither Pontresina nor Samaden presents sufficient attraction to induce the consumptive to select them in preference to the more popular and better known mountain health resorts.

St. Moritz has long ranked as one of the most popular autumnal resorts for wealth and fashion, and since Davos rose into sudden fame it also has begun to solicit the patronage of winter visitants. The village proper occupies a charming situation on the edge of a hill several hundred feet above the level of the valley of the Inn, while the baths of St. Moritz



(St. Moritz Bad) lie beneath on the shores of a picturesque little lake. The scenery in the neighbourhood possesses much charm, and the invalid will not soon weary of the magnificent vista of snow-clad, cloud-engirdled peaks visible from the windows of the hotels in the village. The baths are shut at the conclusion of the season in the month of September, but the chief hotels in the village proper now remain open throughout the winter, and the accommodation is excellent.

A few miles further up the valley on the borders of the lake of Sils is the grand Kursaal de la Maloja, one of the finest hotels in Europe, which is already familiar to the profession through the writings of Dr. Tucker Wise. This splendid building, on which the resources of art and wealth have been unsparingly lavished, leaves nothing to be desired as a residence during winter. The rooms are spacious and luxuriously furnished. The food, attendance, and domestic arrangements are all excellent. Most important of all for the consumptive is the admirable system of ventilation, which provides for the admission of an adequate quantity of pure air at a fixed temperature and for the withdrawal of the waste products. The scenery in the neighbourhood, although somewhat inferior to that of St. Moritz, is nevertheless of great grandeur.

The climates of St. Moritz and the Maloja may be considered together, the differences being trivial. Both are situated at an elevation nearly one thousand



feet higher than Davos ; hence they have a longer winter and a somewhat lower mean temperature. Owing, however, to local configuration both receive more sunshine than Davos, and in this respect the Maloja has slightly the advantage of St. Moritz. As at Davos, the climate is characterised by great rarefaction of the air, great relative dryness, rarity of mist or cloud, and much warm sunshine. The chief point in which the climate of the upper Engadine contrasts with that of the Davos valley is in the amount of wind. We have seen how peculiarly favourable in this regard is the local configuration at Davos, and how essential shelter is for the favourable operation of the peculiar conditions of the High Altitude climate. A very elementary acquaintance with the principles which regulate the bearing of local configuration upon climate will suffice to satisfy any impartial observer that the atmospheric calm found at Davos cannot possibly prevail in a long funnel-shaped valley like the Engadine. Just as the river Inn rushes down this long gorge, so in certain conditions of the atmosphere must there be a similar descent of aerial currents. That such is the case is not seriously denied by any competent authority. St. Moritz has the advantage of being several hundred feet above the bed of the valley, so that the valley current in some degree passes beneath it. The situation of the Maloja hotel, almost at the apex of the long double valley formed at one side by the Engadine and on the other by the

Maloja Pass and the Via Bregaglia, was not happily chosen in view of the necessity of securing adequate shelter. It is also a disadvantage that it should be so near the lake of Sils without being elevated above it.

When we consider the higher aerial rarefaction and the greater prevalence of wind in the Engadine as compared with Davos, it will be evident that the climate of the former is even more stimulating than that of the latter. Hence we should expect that some classes of patients who do well in the Davos valley would find the Engadine too exciting, and experience shows that this is so. It is not an uncommon thing for invalids, wearying of the monotony of existence at Davos, to cross the mountains to St. Moritz or the Maloja simply for the purpose of obtaining a little variety; but in a considerable proportion of cases they return again to Davos, finding the Engadine "too strong" for them. Hence, in recommending a patient to try the mountains, if there be much debility, any feebleness of the circulation or nervous irritability, the Engadine must be ruled out of court. Such cases (assuming that the foregoing symptoms are not sufficiently marked to exclude altogether the mountain treatment) must choose between Davos and Wiesen, the latter being the more suitable for debilitated subjects. On the other hand, in very early consumption where the general vigour is well maintained, St. Moritz and the Maloja possess certain advantages. The longer

winter, the more interesting scenery, and the larger amount of sunshine are points of superiority over Davos with reference to such cases. This rule is already fairly well understood; and the classes of patients whom one meets in the Engadine are widely different from those found at Davos, the former being almost invariably persons who are able to move freely about and in the apparent enjoyment of considerable vigour, the latter representing all types of debility and every stage of the disease.

It is worth remarking that, while Davos is a difficult place to escape from, the invalid for whom the High Altitude treatment proves unsuitable can readily reach a very different type of climate from the upper Engadine. An easy drive of a few hours carries the patient from St. Moritz or the Maloja over the Italian frontier to the shores of Lake Como, where he may either remain or else take rail for the Riviera, a journey of only a little over twelve hours.

It is evident from the foregoing considerations that we have in the four Alpine sanatoria—Davos, Wiesen, St. Moritz, and the Maloja—a graduated series, varying in their tonic and stimulant properties, and in their consequent applicability to different types of disease. Wiesen is the least stimulating, St. Moritz and the Maloja the most, and Davos occupies an intermediate position. The practical deductions from this distinction have already been sufficiently dwelt upon.

The failures of treatment at Davos and the Engadine being in a certain proportion of cases due to the inability of the patient to withstand the cold, we are naturally led to inquire whether there are not some sanatoria where the advantages of purity and rarefaction of the air can be enjoyed in conjunction with a warm or temperate climate. Such resorts are afforded by the Andes, where high elevation and proximity to the Equator furnish the requisite conditions. The best known of these sanatoria is Santa Fe de Bogota, the capital of the United States of Columbia. Although at an elevation of over 9,000 feet, its latitude ( $4\frac{1}{2}^{\circ}$  N.) constitutes it a "temperate zone on the borders of the Equator." The mean temperature is  $57^{\circ}$ , change of season there is virtually none, and the climate is described as one of perpetual spring. Rain falls almost daily, yet the air is exhilarating owing to its rarified state. The elevated plateau or sabana on which Bogota stands is described as very beautiful. There are two harvests in the year, flowers and fruits abound in endless variety, and eternal verdure reigns throughout the year. The city has fair accommodation for strangers, and possesses many objects of interest, but its extreme inaccessibility is a serious deterrent to intending visitors. From Barranquilla, at the mouth of the River Magdalena to Honda, where passengers disembark for Bogota, is a journey by steamboat of from ten days to a month, according to the state of the river; while from Honda to Bogota is a rough journey of

seventy-five miles across the mountains on muleback occupying from three to five days.

There is as yet no evidence to show the results of the treatment of consumption at Bogota, but we learn that the disease is practically unknown in the hospitals there, and the climatic conditions are highly favourable. The rarefaction of the air, combined with a mild and equable climate, affords a conjunction of meteorological conditions likely to operate with beneficial effect. The humidity is not an objection.

Of the other Andean sanatoria, viz., Quito, Arequipa, Jauja, Huancayo, the writer has neither any personal knowledge, nor any information beyond that afforded by the ordinary text-books. They enjoy a great local repute, and theoretical considerations give them a decided claim upon our attention. When the Panama Canal is constructed Lima will be within easy reach of England by steamer, and the journey thence to some of the Andean resorts does not present any difficulty likely to daunt the traveller for health. It seems not improbable that before many years are past the Andes will divide with the Alps the patronage of those patients who elect to try the mountain cure. The important point to note is that, possessing in common simply aerial rarefaction, these two regions are contrasted in all the other essentials of climate, and hence are likely to prove suitable to different types of consumption. The recognition of the Andes not only gives us another High Altitude resort, but one which fills a place hitherto unoccupied.

The High Altitude treatment of consumption has made its position good in spite of ignorance and prejudice, but much yet remains to be done before its precise function and the exact measure of its utility can be definitely established. To this consummation many minds must contribute, and for its completion the experience of many years must be patiently awaited.

## CHAPTER V.

### THE OCEAN VOYAGE.

THE sea-voyage has long been a favourite prescription in consumption, and its utility is unquestionable. Many good authorities lean to the opinion that, on the whole, the results thus obtained excel those yielded by any other method of treatment; but comparative statistics are difficult to obtain, and are apt to be peculiarly illusory in the domain of therapeutics. Nevertheless, there is no reason to question the great benefit which usually accrues in cases of consumption from a sea-voyage, carried out with due precautions and under conditions favourable to its efficacy, and its popularity is decidedly on the increase.

Theoretical considerations would naturally suggest life at sea as likely to prove beneficial to the consumptive. The pure fresh tonic sea-air ever sweeping through the ship and disinfecting all noxious gases, the open-air life constantly pursued, the equability of the marine climate, the absence of many of the

worries and unwholesome influences of civilised life on land—all these tend to promote nutrition, to stimulate healthy development, and hence to retard or arrest the tubercular process. It has long been remarked that seafaring populations are remarkably exempt from consumption. The disease is incomparably rarer in the navy than in the army, the difference being presumably due not to any superiority of the former as regards diet or exemption from privation, but rather to an occupation entailing a life of constant activity in a pure atmosphere. The obvious drawbacks to a long sea-voyage—such as uncomfortable quarters on shipboard and the difficulty of obtaining a sufficiently generous and varied dietary—have practically disappeared in these days of floating palaces and ice-chambers. Absence from home and separation from friends are disadvantages which the sea-voyage shares with all forms of climatic treatment. The perils of the sea—once the first thought which arose in the mind of any sufferer on the suggestion of a voyage—have been reduced to their just proportions, and now rarely form a serious obstacle in any case where we desire to obtain the important therapeutic advantages of sea-life. The ocean has gradually been robbed of its terrors. We know that, so far from being constantly storm-tossed, its more usual mood is one of placidity and calm, and the hard unanswerable logic of statistics conclusively proves that there is as much risk in travelling by rail from



Edinburgh to London as in the voyage from Liverpool to New York, or from Plymouth to Melbourne.

For the consumptive, the Australian voyage is to be preferred. Its length and variety, the average warmth and calm weather which usually prevail, and the ample provision made for the traveller's comfort on the best ships, are all strong arguments in its favour. He will be well advised in the majority of instances to choose a sailing-ship in preference to one of those fast steamers, which now appear almost to annihilate distance and to bring the antipodes to our very doors. The invalid does not desire to make "the quickest run on record." He has come to sea in order to enjoy to the full sea-air, sea-life, and sea-leisure ; and the longer the voyage, provided it fall short of inducing intolerable *ennui*, the greater the gain to health. Again, in the comparatively slow moving sailing-ship, the changes of temperature are gradual ; while the fast steamship, going at a uniform rate of fourteen or fifteen knots per hour, flies rapidly through many degrees of latitude ; and the invalid is hurried too quickly from the fogs and cold of Britain to the heat of the tropics ; and again with equally undue rapidity from the equator to the icebergs of the southern ocean.

The sailing-ship has other advantages. The passengers are usually fewer, and there is consequently less crowding and more privacy. The sleeping-cabins are more commodious than those of steamers, and four persons are not huddled together

in a space six feet by eight in a manner alike destructive of comfort and inimical to health. The sailing-ship is free, also, from the dust and dirt produced by smoke, from the indescribably nauseous odour of oiled machinery, and from the ceaseless grind of the engines and vibration of the screw. In favourable weather her motion is smooth and graceful, conducing to sleep and comfort. Just a little ripple at her prow as the cutwater dashes the blue ocean into foam; just a little gurgle in her wake as the waves close over the rent made by her passage through their depths; just a slight creaking of the cordage, or faint "sough" from the sails—all else silence and the majesty of silent motion.

In the long voyage of nearly twelve thousand miles from England to Australia *viâ* the Cape of Good Hope, the invalid necessarily encounters many changes of weather and many varieties of marine climate. The English Channel and the Bay of Biscay are somewhat notorious for their heavy cross seas, and the first week on shipboard is apt to be a time of boisterous winds and wet decks above, and of sea-sickness and discomfort below. But ere long a change comes. The sun mounts towards the zenith, the temperature rises, the colour of the ocean darkens to deepest indigo, the winds lose all their roughness and become balmy and benign. Soon the trade winds begin to blow, at first fitfully, but soon, with a strong steady blast before which the sailing-ship daily logs 250 to 300 miles. This is to the con-

sumptive perhaps the most agreeable portion of the entire voyage. He can remain on deck the entire day without fear of chill, either reclining in his easy chair or enjoying a leisurely promenade. The soft air soothes his cough while its tonic quality maintains his appetite; the brilliant sunshine revives his feeble energies, while the heat is tempered by the breeze and the steady motion of the vessel allows the free pursuit of various games and amusements. The chief drawback is the increasing closeness of the air at night in the cabins, which becomes more and more marked as the Equator is approached. After a period varying in duration from two to four weeks, according to the fortunes of the voyage, the vessel runs into the Belt of Calms, where more or less detention must be expected. Every one has read the *Ancient Mariner*, hence every one has a vivid idea of what is meant by being becalmed upon the Equator. It cannot be denied that it is an unpleasant experience, and that the necessity of encountering it is a serious drawback to the otherwise overwhelming advantages of the sailing-ship over the steamer, from the point of view of the invalid. For a period varying from two or three to fourteen or fifteen days, the ship drifts helplessly upon a glassy ocean, vainly setting her sails for every deceptive cat's paw, which springs up suddenly only to die as quickly away. Although the thermometer rarely registers more than 80° – 85° Fahrenheit, such is the humidity of the air that the sensation of heat is most oppressive, and the resulting languor

weighs upon all, healthy and ailing, alike. Tornadoes sometimes spring up with startling suddenness, deluging the decks with rain, but subsiding too quickly to assist materially the vessel's progress. However disagreeable may be this period of detention in the Belt of Calms, the author has seen nothing to lead him to believe that it is ever seriously injurious, and he believes that, as a general rule, invalids feel its enervating influence less than those who are strong and vigorous. Some fortunate vessels carry a steady breeze right across this troublesome belt, but this is quite exceptional. Steamers traverse it in a few hours, and their constant motion helps to mitigate the oppression of the moist heat. Sooner or later the sailing-ship succeeds in emerging from this torpid zone, the south-east trade wind begins to make itself felt, and ere long the voyage proceeds rapidly as before. The prevailing winds often drive the vessel into the neighbourhood of the Brazilian coast, but as soon as possible the captain heads eastward and runs down as far as  $45^{\circ}$  or  $48^{\circ}$  of south latitude, in order to catch the "brave west winds" which in these regions sweep athwart the globe, varying little in force or direction. The weather during this, the concluding portion of the voyage, is often cool, bracing and delightful; but at certain seasons is somewhat too cold and stormy. The invalid needs to practise caution regarding clothing, food and exercise, the long passage through the soft air of the tropics being apt to induce a carelessness about those ordinary

safeguards which the consumptive can never safely neglect. Chills and inflammatory attacks are, however, comparatively rare, except as the result of palpable indiscretions. At length, after a voyage varying from seventy to ninety days, Australia is sighted, and the traveller disembarks at Sydney, Adelaide or Melbourne.

Life at sea during such a voyage necessarily involves many points of contrast with ordinary life on land. For nearly three months the invalid is shut in upon a floating house, perhaps 250 feet long by 50 feet broad, and all intercourse with the outer world is absolutely impracticable. This alone amounts to a revolution in the daily habits of the individual. There is no morning paper, no postman's knock, no telegrams, no rushing for train or tramcar, no daily confinement in close office, court, or consulting-room. If the daily pleasures are few, the daily cares are fewer still. The passenger has only to eat, sleep, and live. His most pressing duty is to attend the summons of the dinner-bell, his chief interest to watch the changing humours of sea and sky, or lean over the bulwarks and conjecture the rate of the vessel's speed, or await the daily announcement of the log. The strain of life is withdrawn; the wheels of existence move easily and with lessened friction. The voyager yields to the soft influences operating upon him; he is no longer ashamed to be lazy; he gradually resigns all his good intentions of turning the long hours at sea to good account for purposes of intellectual cultiva-

tion ; he becomes a lotus-eater for the nonce. Such luxurious indolence, which at other times and in other places would be contemptible, is here perfectly right, because perfectly natural. The Neapolitan lazzaroni, the Hindu, the Tongan, and Tahitian, are constitutionally indolent, because climate and the conditions of life prohibit energy. The traveller by sea has no motive for activity, and naturally refrains from an expenditure of vigour for which there is no demand.

In the case of the invalid, this restfulness, this intense indisposition for mental or physical exertion, this careless *insouciance*, have a profound explanation. During those long hours and days of calm and inactivity, nature is busily at work, repairing the waste of years of toil or the ravages of tedious disease. Unseen hands are silently engaged in building up again the broken cells ; unseen fingers are busily rearranging the disordered machinery of life. He will be wisest who will let nature work on, yielding himself to an instinct which he only half comprehends.

To the consumptive the most important features of sea-life are the pure tonic atmosphere and the long hours of uninterrupted enjoyment of sunshine and fresh air. In the warm latitudes the passengers live on deck, going below only to eat and sleep, and frequently spend as much as fifteen hours daily in the open air. To those who adopt the modern views of the ætiological relations of consumption, the immense advantage of such a mode of life will be evident.



Pure air may be obtained in the desert, among the mountains, or at sea, but for absolute purity the last must carry away the palm. All the ordinary sources of atmospheric contamination are absent, and, granting a healthy hygiene of the ship, the air at sea approaches as nearly as may be to ideal purity. There can be little doubt that in this fact lies a large part of the secret of the remarkable utility of the sea-voyage to the consumptive, to whom pure air is in the most literal sense the very breath of life.

The remarkable equability of the ocean climate is another fact of importance. The variations of temperature at sea from day to day are trifling, and steadily progressive with changes of latitude, sudden fluctuations being almost unknown. The winds are all sea-breezes, all tempered by the touch of ocean, and usually blow from the same point of the compass for many days together. Chill—that word of fearful import on land—has no existence at sea. Sailors rarely suffer from ordinary catarrhs or colds, and even sleep with impunity on the bare deck. The changes of temperature at sea, being regular and gradual, can be reckoned on, and suitable preparation can be made. January does not surprise us with its mildness, nor does mid-winter suddenly return in May. The east wind has lost its evil name. The kiss of the sea has spirited away all its rigour and invested it with unwonted softness. The voyager is greatly interested in noting the direction of the wind, owing to its effect upon the vessel's progress, but he

forgets to associate peculiarities of temperature with it. If it be fair, he cares not from what quarter it blows.

The saline particles in sea-air, the abundance of ozone, the slight impregnation with bromine and iodine, have all their salutary effect, and tend to influence favourably the course of disease.

The intense humidity of sea-air has its inconvenient side, as the passenger discovers when he comes to open his long stored-away baggage, but associated with other marine climatic conditions it possesses certain advantages. It tends to relieve cough, and to soothe nervous irritation and unrest.

The high average range of the barometer and the equability of pressure are not without their significance. Every one knows the profound stillness and calm of a day on which the glass stands unusually high. The air seems wrapped in slumber, and the sun shines with undimmed lustre; the clouds, now like fleeces of silver, again like battlements of purest marble, seem to have withdrawn to the remotest heights, and the arch of heaven appears to have lifted itself beyond its wont. Such days are not rare at sea, being especially common on the polar verge of the trade-wind belt, and are grateful to the invalid, but unwelcome to the sailor, as tending to delay the vessel's progress and prolong the voyage.

The disadvantages and discomforts of sea-life are nevertheless genuine, and cannot be gainsaid. The



most real is probably the inevitable monotony of existence, the entire absence of serious occupation. Amusements are greatly restricted. The ever-present ocean presents little variety of scene. Each day is a counterpart of its predecessor, a monotonous round of eating and sleeping, with only such occasional *divertissements* as quarrelling or flirtation. This is at times trying to the man of unimpaired mental and physical activity, but to the invalid the benefit outweighs the tedium. He feels little inclination for employments for which he has no energy, and does not miss amusements which he has no longer the capacity of enjoying. Even the most energetic must yield at times to the prevailing atmosphere of languor and ease. Men of vigorous bodies and active brains find pleasure at sea in trifles which at other times would seem contemptible. A sailor going aloft to shake out a sail becomes an object of interest; a porpoise or a dolphin playing alongside excites the liveliest curiosity. Games, which on land would find their proper sphere in the nursery, are keenly relished on shipboard by the oldest and the gravest. A chance lurch of the ship, disturbing the conditions of some contest, affords material for abundant merriment and laughter.

Alleviations to the necessary tedium of life at sea are afforded by the appearance of passing vessels, the sight of land, the opportunities presented for observing whales, sharks, porpoises, dolphins, bonitos, and the various species of sea-bird, the last of which are

rare in the tropics, but very numerous in the southern ocean, where albatrosses, petrels, Cape pigeons, and their congeners abound. Some travellers while away many a tedious hour by the pursuit of astronomy, for which a sea-voyage affords unusual facilities; others, again, devote themselves to the practical study of navigation under the direction of the officers of the ship; others, perhaps happiest of all, apply themselves to their favourite hobby, be it music, painting, embroidery, wood carving, or what not. It is remarkable, however, how little the necessity for continuous occupation is felt on ship-board, and how nearly the passengers one and all drift into a condition of almost ideal idleness. The energetic man is the butt of much ridicule, and the ridicule is usually sooner or later effective.

But the voyager will naturally seek amusement and distraction mainly in the society of his fellow-travellers; and the composition of the passengers' list is a matter of the chiefest interest and importance to him. A ship's company is a microcosm, a photograph in miniature of the great world of action and passion. Each unit makes itself felt in so small a sphere, and the aberrations of one body are sufficient to throw all that little universe out of gear. On shipboard, all the natural characteristics of the individual tend to become exaggerated; the selfish person becomes more than ever self-seeking; the unselfish person has unwonted opportunities for self-abnegation.

The preparations for the voyage need not be on a very extensive or elaborate scale. Steamers fit up their cabins with the ordinary requisites, but it is still the practice in sailing-ships to let the cabins unfurnished, leaving their equipment to the discretion of the passenger. In such cases, it is well to provide (in addition to the usual essentials of a sleeping apartment) a curtain for the door, an easy chair, a book-rack, a thermometer, and a sponge-bath. The mattress should be of wire, and matting is preferable to carpet. As regards dress, the ordinary English clothing will be found suitable for the earlier portion and the last stage of the voyage, but in the tropics the lightest garments are felt to be a burden. Here, nothing is so suitable for male passengers as a light flannel cricket suit, worn without any addition whatever. Owing to the impossibility of having washing properly done, the supply of underclothing should be adequate for the entire duration of the voyage. The passenger will do well to include among his *impedimenta* a liberal supply of books, such games as he enjoys, a rug or two, several cushions, and a waterproof suit. The provision of any luxuries in the way of food may be left to the discretion of the individual. In the best lines such a reinforcement of the ordinary ship's stores is unnecessary for comfort, whatever individual taste and habit may demand.

Although a sea-voyage is a powerful restorative in consumption, it is not possible to lay down absolute rules which shall include every case susceptible of

benefit and exclude every instance of probable failure. In early consumption without severe symptoms—such as high fever, rapid emaciation and great prostration—the sea-voyage often succeeds admirably and still disputes the palm with the high altitude treatment. A tendency to hæmoptysis has been laid down as a ground for prohibiting the sea-voyage, but on no sufficient ground. Hæmorrhage is unquestionably rare on shipboard, and the dread of tropical heat acting as an exciting cause seems to rest upon a misconception. In advanced cases of consumption, the sea-voyage is as futile as other remedies, and the less applicable from the attendant expense, discomfort and separation from home and friends. Constitutional timidity, melancholia, persistent dyspepsia and extreme susceptibility to sea-sickness are all points against the recommendation of a sea-voyage. The presence of the scrofulous habit or a tendency to rickets in the consumptive is a ground for anticipating the maximum of advantage from prolonged life at sea.

The writer has made four long sea-voyages of an average length of over ten thousand miles each, and has had as fellow passengers a large number of consumptives in every stage of the disease. In nearly every case temporary benefit was obtained, and the sufferers felt happy and comfortable at sea and readily adapted themselves to their novel conditions of life. In some cases of extreme prostration the rally after a few weeks on shipboard was remarkable, and in the

great majority of instances there was an increase of appetite, a heightened tone of the digestive organs, and an improvement in nutrition. Hæmoptysis occurred in only two instances, and in neither did it prove serious. Cough was rarely troublesome, nor was night-sweating much complained of. On the other hand, some patients suffered from insomnia—the consequence, not of any essential feature of the oceanic climate, but of close cabins and the various noises and disturbances so common on shipboard. The improvement at sea was notably greater in the earlier than in the later stages of the disease, even beyond the ratio usually observed under various methods of treatment. Incipient cases progressed almost without exception rapidly and satisfactorily, while the most that could be said regarding advanced cases was that they obtained some symptomatic improvement. When the whole circumstances of the case are kept in mind—the inevitable discomforts of life at sea, the occasional hardships during severe weather, the absence of many of the luxuries and palliatives which can be enjoyed on land, the separation from friends and the uncertainty as to what development of the malady may occur before return home is practicable—it will seem a natural and prudent rule not to send cases of advanced consumption to sea. On the other hand, the writer has little doubt that cases of commencing apical catarrh, in persons not markedly debilitated and with fair family history, will in a large proportion of cases be surely and

permanently cured by a sufficiently long residence on shipboard. It is essential, however, that more than a single voyage be taken, and that precautions be adopted against retrogression during the interval between the voyages. When we consider the extremely gradual progress of the reparative processes in consumption, it will not seem surprising that even a voyage of three months' duration should be altogether inadequate to secure the repair of the diseased lung. A year at sea may afford a strong ground for hope, but it would be rash to anticipate cure from a shorter period. Some writers describe a species of exhaustion alleged to follow repeated sea-voyages, and believe that more benefit follows from allowing a considerable interval to elapse between one voyage and the next. It is difficult to understand this theory, and no evidence has been advanced in its proof. General experience shows that the vast majority of invalids become habituated to life at sea, and this tolerance of the oceanic climate and its usual concomitants certainly does not become less as time goes on. A strong argument against allowing any considerable interval to elapse between one voyage and another is found in the fact that relapses are extremely common on resuming life on shore after a long sea-voyage. The patient while on shipboard has settled down to a regular routine of life and a fixed dietary which have proved beneficial, but on landing he meets with a hundred temptations to imprudence in habit or in food. He forgets that,



while night air and draughts are comparatively innocuous in the equable climate of the ocean, they are fraught with grave peril to him on land. His long abstinence from various luxuries makes him all the more prone to over-indulgence. Hence nothing is more common than to find that the consumptive, who during the course of a long sea-voyage has felt restored to almost perfect vigour, on landing falls a prey to bronchitis, pneumonia, diarrhoea or other complication. No doubt *ennui* and the difficulty of devising sufficient amusement and occupation on shipboard are serious obstacles to a rapid succession of long voyages, but they are comparatively trivial in view of the dread realities of life and death. The patient is happy who is a diligent student, gifted with literary faculty or endowed with artistic taste. Reading, original composition, or artistic work can be pursued without serious hindrance on shipboard, and help the lazy hours to move. A young medical man, who finds himself threatened with consumption, may obtain an appointment as surgeon to a ship, and thus pursue his profession under circumstances most favourable to recovery.

The Australian voyage has been recommended as affording the maximum of advantage. The voyage to the Cape is agreeable but too short. The voyage to India or China involves a larger proportion than is desirable of travelling through the tropical seas. The voyage to San Francisco round Cape Horn offers great advantages as regards length and variety,

but the proportion of severe weather is much higher than in the voyage to Australia, and the vessels in the trade do not offer any special facilities for invalids. It is regrettable, from the point of view of the invalid, that steamers are everywhere rapidly superseding sailing-ships, but several favourite clippers still hold the seas in the Australian trade, and some of them cater especially for the patronage of the invalid.

Health at sea, as on land, depends much upon the habits of the individual, and the wisdom which he shows in adapting himself to new conditions of life. The common error on shipboard is to renounce active exercise, for which the facilities are necessarily limited, and yet to indulge freely in the pleasures of the table, for which the bracing air affords an ever-ready zest. Hence arise the dyspeptic troubles which form so frequent a subject of complaint on shipboard. The voyager should recollect that he must either maintain the active habits which he practised on land, or else reduce his consumption of the heavier articles of food. The former is the wiser as well as the more agreeable course, and with perseverance and obedience to rule, there is no insuperable difficulty in obtaining the necessary amount of exercise on shipboard. The promenade, it is true, is very limited in range, but the air is always fresh, and the sense of the constant movement of the vessel helps to obviate satiety.

Another common error at sea is to maintain an almost unbroken monotony of diet in defiance of



temperature and latitude. In some ships rich soups, pork, suet puddings, and other highly heating articles of diet are supplied even in the tropics. While the healthy may venture on such a flagrant violation of physiological law with comparative impunity, such a course is highly perilous to the delicate and ailing. Obviously in hot latitudes red meats and fatty foods should be avoided, and their place supplied as far as practicable by poultry, vegetables and farinaceous articles of diet. As regards drinks, none is more grateful or more useful in the tropics than the simple juice of the lemon.

Those who have enjoyed large experience of sea voyages must have been struck with the high average of health usually maintained on shipboard. Excluding epidemic disease which some ships unluckily find to be not less an item of cargo because omitted from the bills of lading, serious disease is rare among the healthy, and the number of invalids who fail to derive at least temporary benefit is remarkably small. Constitutional inability to conform to the conditions of sea-life may occasionally present itself, but its existence will usually be suspected in time to prevent embarkation.

The traveller by sea will possess enhanced prospects of pleasure and benefit, if he has resources of occupation and distraction within himself; if he has learnt the happy art of adapting himself to novel conditions of existence, and can bear with equanimity inevitable discomfort and occasional hardship.

## CHAPTER VI.

### AUSTRALIA.

FROM the time of its earliest settlement Australia has enjoyed a high repute for salubrity. The first colonists, though brought together under circumstances unfavourable to health, and living amidst continual hardship, soon became a vigorous and prolific race. They developed a type of physique whose vitality was shown by the broad shoulder, the ruddy complexion, and the bushy beard. Their numerous offspring grew up to vigorous maturity, without exhibiting any material divergence from the ancestral stock. Flocks and herds, bird and plant, seemed to respond to the healthful stimulus of the climate. On the vast rolling downs of the interior the sheep multiplied with astonishing rapidity; the horse took no less kindly to the new conditions of existence, while the imported sparrow soon twittered on every house-top, and the vine and fig, the orange and the olive, flourished with unparalleled luxuriance. Of the climate it was reported that the heat

was frequently extreme, and the dust storms disagreeable, but that three-fourths of the year boasted brilliant skies, and a soft dry atmosphere, with almost complete immunity from the cold and damp of Britain. Regarding health, the report was equally favourable. The death-rate in the early years of colonisation scarcely exceeded half the British average. Epidemic disease was rare; of endemic disease there was none. Many of the scourges of Europe had never appeared, and others seemed robbed of half their virulence in that land of sunshine and plenty. The peculiar vegetation of the country was believed—and with reason—to exercise a potent prohibitive influence upon miasmatic disease, and even the most dreaded feature of the climate—the hot wind—was revealed as a friend in disguise, parching to vegetation and exhausting to man, but still more lethal to sources of putrefaction and organic contagion. Especially was consumption alleged to be rare in Australia, and in the more favoured regions almost unknown.

The inevitable reaction has come. Many of the facts regarding the marvellous healthfulness of Australia were accepted on insufficient data, and could not be maintained in the face of accumulating evidence. With growing population and an increasing struggle for existence, the country undoubtedly became less healthful and more obnoxious to the usual penalties of civilisation. It was startling to find that consumption had become hardly less rife

in Melbourne and Sydney than in London and Edinburgh. Hence some of the most recent authorities <sup>1</sup> are disposed to question the title of Australia to any peculiar healthfulness, and attribute its early reputation entirely to sparseness of population and simple modes of life, ignoring its climatic peculiarities as destitute of any special merit. It will not be difficult to show that this latter-day depreciation of Australia is as questionable as the indiscriminate eulogies of an earlier period, and that with certain safeguards and qualifications it still deserves to rank high as a sanatorium—especially for the consumptive.

Australia is one of the dry and hot regions of the world. The summer heat is almost everywhere great and the thermometer rises as high as in India, while frost and snow are exceptional—except in certain mountainous regions—and in many parts quite unknown. Although the rainfall is in some places considerable, the intensity of evaporation is such that the atmosphere is remarkably dry. Brilliant sunshine, azure skies, and balmy air, are the leading climatic features of the continent, while its most disagreeable characteristic—the hot wind—is confined to certain localities, and prevails only in the summer season.

While such are the general peculiarities of the Australian climate, no description can have the least pretence to accuracy which does not recognise the natural physical divisions of the country. Disregarding the Northern Territory as unsuitable for the

<sup>1</sup> Hirsch, *loc. cit.*

invalid, and Western Australia as lacking in interest and the necessary comforts of civilisation, there remain for consideration Queensland, New South Wales, Victoria, and South Australia. It will be more profitable, however, for our present purpose, to disregard the arbitrary boundaries of the various colonies, and to seek a classification rather in the physical features of the continent as a whole. Three regions present themselves for consideration.

1. The Littoral Region.
2. The Highland Region.
3. The Region of the Inland Plains.

The range of mountains rising in Queensland, continued as the Blue Mountains and the Australian Alps of New South Wales and as the Great Dividing Range and the Pyrenees of Victoria, and finally ending near the South Australian border, suggests this natural division. We have thus in Australia a narrow strip of littoral, a mountain range of varying height and extent, and a vast inland plain, in some places rising to the elevation of a plateau. All descriptions of Australia with a view to climate and health must recognise the obvious contrast between coast, mountain and plain.

#### 1. *The Littoral Region.*

This strip of territory, hemmed in between the mountains and the sea, varies in breadth from twenty to a hundred and fifty miles, and includes the most settled region and the capital cities of the various

colonies. Its physical features vary. Parts are wild and barren, a wilderness of scrub, or a desolation of rock ; parts are among the most favoured regions in the world. The Illawarra of New South Wales is a district of gardens, orchards and pastures, and deserves its title of the garden of the colony. Gippsland in Victoria is a region of forests and gullies, fern-tree dells and waterfalls, vineyards and hop-gardens—very unlike the typical conception of Australia. But in the main the littoral region is flat and bare, parched in summer, and ranking low in point of natural beauty. In all directions stretches the level plain or the low sand-hill, and everywhere are the gum and the wattle. The climate of this region shares the general characteristics of Australia. The summer heat is very great, though somewhat less than upon the inland plains. The hot wind is distressing at Melbourne and Adelaide, less frequent at Sydney, and unknown at Brisbane. The rainfall is considerable, varying from seventy inches per annum at Brisbane, to sixty at Port Macquarie, fifty at Sydney, fifty at Cape Otway, thirty at Melbourne, and twenty<sup>1</sup> at Adelaide, but evaporation is so active that the atmosphere is usually very dry. The rain comes in sudden deluges, and days of drizzling wet, so frequent in England, are unknown.

Although the temperature of the littoral parts

<sup>1</sup> These figures are only approximate, the meteorological records of the colonies being yet too brief to admit of averages being given with precision.

shows less contrast in regard to season than upon the mountains or the plains, still the coast must be reckoned the most variable region of Australia.<sup>1</sup> Sudden changes of temperature are frequent, and days of stifling heat are not uncommonly succeeded by evenings of storm, rain and chill. This variability of the coast climate is easily explained. Australia is a hot continent bounded on the south by a cold sea, which is constantly swept by chilly blasts rushing up from the Antarctic Circle. The hot wind from the central desert and the cold wind from the polar seas come into contact at the coast, which thus becomes the arena of a fierce atmospheric battle, resulting in sudden and violent perturbations of temperature and humidity. As the hot wind prevails only in summer these sudden oscillations are limited to that season. This grand conflict of winds produces phenomena of great magnificence, but the consequent irregularity of temperature is fraught with peril to the infant and the aged, and may be disastrous to the invalid. Hence it must be laid down in the most dogmatic manner that the summer climate of the Australian littoral region is variable and capricious, and wholly unsuited to the necessities of the consumptive. At some favoured regions, such as Eden and Twofold

<sup>1</sup> This statement is opposed to the authority of many writers who have described the coast climate of Australia as equable, in accord with the usual rule. They have not made sufficient allowance for the peculiar features of Australia—the narrow strip of coast hemmed in between cold sea on the one hand, and mountains and burning plains on the other.



Bay in New South Wales, and parts of Gippsland in Victoria, this variability is reduced by conditions of local shelter; but the invalid is apt to resort to one of the colonial capitals, which all possess an objectionable summer climate. A contrast between Melbourne, Sydney, Adelaide and Brisbane will be instructive. The mean temperatures and annual rainfall are as follows :—<sup>1</sup>

	Mean Temperature.	Annual Rainfall.
Melbourne	57·5° F.	30 inches.
Sydney	62·5° F.	50 „
Adelaide	63·3° F.	21 „
Brisbane	69° F.	70 „

Brisbane is thus much the hottest and the wettest of the four capitals, but at the Queensland capital the thermometer rarely exceeds 100°, and never touches 32°, so that the temperature has considerable equability. Brisbane is out of the reach of the hot wind, and feels the influence of the trades. The climate is distinctly sub-tropical, and contrasts decidedly with that of the other capitals.

The climates of Melbourne, Sydney, and Adelaide have much in common. They have all summers of great heat and frequent dust-storms, while the other seasons are mild and agreeable. Autumn and spring are charming, and winter has none of the rigours of Europe. Adelaide is the hottest of the three, and not being protected by any well-defined mountain range,

<sup>1</sup> Bonwick.

such as the Blue Mountains of New South Wales, or the Great Dividing Range of Victoria, it suffers most from the impact of the scorching blasts from the interior. The configuration of the coast, also, deprives it in part of the cooling influence of those southerly breezes which do much to mitigate the heat of Melbourne. The heat of Adelaide during the months of January and February is frequently very great, the thermometer attaining a maximum of  $110^{\circ}$  or  $115^{\circ}$  in the shade. A better idea of average temperature is conveyed by the statement that in one season the thermometer rose above  $90^{\circ}$  on forty-five different days. The climate of the region adjoining Adelaide has been compared with that of Sicily, but the comparison is fanciful rather than exact. Sydney is cooler than Adelaide, but the greater humidity renders the heat more relaxing. A mean summer temperature of  $70^{\circ}$ , and a mean winter temperature of  $52^{\circ}$  represent considerable equability of season, yet sudden changes are common at Sydney, and the summer climate is especially fickle. Snow has fallen only twice during the present century. Dust is a frequent trouble; and the mosquitoes are more enterprising than on most portions of the Australian continent. Melbourne is cooler and drier than Sydney. Its mean summer temperature is  $66^{\circ}$ , its mean winter temperature  $49^{\circ}$ . The rainfall has been as high as thirty-two and as low as nineteen inches, the former figure being much nearer the general average. Melbourne gets its full share of the hot winds from the interior, and

owing to its position, it feels the cold south winds more than Adelaide or Sydney. Hence, sudden and extreme fluctuations of temperature are common, especially in summer.

It must be owned that none of the capital cities present the meteorological conditions which are desirable for the consumptive. Heat, dust, and instability of temperature characterise them all, and seriously detract from their merits as sanatoria. Other portions of the littoral region are more favoured. Parramatta, lying embowered in orange groves at the head of Port Jackson, has a drier and cooler climate than Sydney. The Illawarra district of New South Wales has already been favourably mentioned, and Eden and Twofold Bay are indicated as health resorts destined to greatness. In Victoria there are parts of Gippsland possessing a soft mild climate, while the western district exhibits some desirable climatic types. It must ever be borne in mind, however, that in the colonies the choice of the invalid is limited by the possibility of obtaining suitable accommodation. It is useless to indicate sanatoria which are either inaccessible or incapable of affording the ordinary comforts of life.

## *2. The Highland Region.*

The mountain range which, under various names, runs parallel to the coast from Queensland to near the South-Australian border of Victoria, varies in height from 3,000 to 7,000 feet. The highest peak is

Mount Kosciusko in the Australian Alps, which attains an altitude of 7,175 feet. This extensive chain contains many varieties of climate, but full and exact observations are for the most part wanting, and the mountain region is as yet only very partially available for the purposes of the invalid. Our growing knowledge of the great value of mountain sanatoria in consumption suggests that the great Australian chain may yet afford health resorts to rival Davos and St. Moritz, Denver and Manitou, Bogota and Arequipa ; but this is in the future. At present, two mountain stations only are known beyond the limits of the colonies, viz., Mount Victoria in New South Wales, and Mount Macedon in Victoria. These are summer resorts, and afford an agreeable refuge from the heat of Sydney and Melbourne respectively. They possess a fine climate and picturesque scenery, but little provision for the peculiar necessities of the invalid.

### *3. The Region of the Inland Plains.*

Here we find the typical Australia. Beyond the mountains stretches the vast Riverine plain, bounded on the south by the River Murray, whose affluents—the Murrumbidgee, the Lachlan, and the Darling—give it its name, on the north by Queensland, on the east by the Blue Mountains and the Australian Alps, and on the west by the great central desert. This great plain consists of undulating downs and rolling prairies, destitute for the most part of tree or grass, but producing vast quantities of the salt-bush

(*mesembryanthemum*), which affords excellent fodder for sheep. The rainfall does not exceed fourteen inches per annum—too little for agricultural purposes—but the Riverina has been justly styled the finest pastoral region in the world. It is the chosen home of the squatter, who counts his acres and his sheep by hundreds of thousands, and dreads only two foes—drought and the reformer of the land laws. Here we find the typical colonial life—a modern reversion to the conditions of existence which prevailed when the patriarchs fed their flocks on the plains of Mesopotamia. The squatter is a sort of potentate of the Oriental type. As far as the eye can reach the rolling plains are his. The sheep all bear his brand. His nearest neighbour is twenty or thirty miles distant. The nearest village, church, or police station, perhaps twice as far. He lives surrounded by his family and dependants, owning no superior, swaying an absolute but imperceptible authority, free from ostentation, careless of ceremony, and welcoming every stranger with a sincere and hearty, if somewhat primitive, hospitality.

The climate of these great plains is characterised by heat and dryness. The thermometer frequently rises to 110° or higher in summer, but owing to the extreme dryness this degree of heat is less felt than a lower temperature upon the coast. Hot winds and dust storms are frequent, but days of still, cloudless sunshine form the rule in summer. Owing to their remoteness from the sea these plains feel

but slightly the influence of the cold southerly winds, and, although the daily range of temperature is somewhat higher than upon the coast, sudden fluctuations are less frequent than in the littoral region. Summer is trying from the high range of temperature, but the other seasons are delightful. In winter there is a little morning frost, but the mid-day is always warm. Autumn and spring present an almost ideal perfection of climate.

The great trouble is drought. The average rainfall of the Riverina is reckoned at fourteen inches, but in some districts there have been years when the fall has not exceeded five inches. The most favoured region is the southern Riverina between the Murray and the Murrumbidgee, where the rainfall varies from twenty-four inches at Albury upon the Murray, an important centre of the vine-growing industry, to fifteen inches at Deniliquin. Between the Murrumbidgee and the Lachlan the average falls to ten or twelve inches, while at Menindee upon the Darling the record has been as low as six inches, and at Fort Bourke upon the same river as low as four inches. It is only in exceptional years that the drought causes much suffering, but at times the distress and damage are severe.

Such then, in brief, is a bare outline of the natural physical divisions of Australia and their relative climatic peculiarities. Let us now consider in more detail some of the leading features of the Australian climate as a whole.

*a. Heat.*—Australia, as already stated, is one of the hot countries of the world. The isothermal line of  $80^{\circ}$  intersects the Gulf of Carpentaria, while the line of  $70^{\circ}$  just touches Brisbane. The main feature of the climate, however, is less its high annual range than the great heat of summer. At Melbourne, Sydney, and Adelaide, the thermometer frequently exceeds  $100^{\circ}$ , and has reached as high as  $110^{\circ}$  and  $112^{\circ}$ . Such high readings rarely last more than a day or two, and the ordinary summer's day at these various capitals shows a temperature of perhaps  $80^{\circ}$ . Even when extreme, the heat is neither unhealthy nor enervating. The air is intensely dry, perspiration is freely maintained, and physical vigour suffers little abatement. Mechanical labour is easily pursued at high noon of the hottest day, with no greater exhaustion than is felt during a day of exceptional heat in the home country. Cricket matches have been played with the thermometer at  $100^{\circ}$ , and the writer can recall a picnic carried out with much zeal with the glass recording a shade temperature of  $119^{\circ}$ . The air seemed to scorch and burn, but there was no sense of profound languor and no indisposition for the pursuit of pleasure. During the hot season in India labour is almost entirely suspended for a long mid-day siesta, punkahs and cooling drinks are in constant requisition, and sleep is solicited. But in Australia the daily toil proceeds without intermission during the hours of greatest heat. The colonist growls at the weather, and pours



maledictions upon the hot wind ; but he never thinks of eschewing labour, and would scorn the suggestion of a mid-day sleep. In the mountain districts the great heat of day is succeeded by nights of comparative coolness, but on the plains and at the coast the heat often persists throughout the night.

*b. The Hot Wind.*—This is the analogue of the sirocco and harmattan of Africa. Arising in the great central Australian desert—a treeless and waterless waste—it sweeps across the pastoral plains, rises over the range of mountains, and descends with fury upon the coast. The idea that the prevalence of wind can have the effect of enormously aggravating heat is rather a novel one to those who have been accustomed to associate atmospheric movement with the conceptions of coolness and refreshment. But in Australia, the heat is always tolerable until the hot wind begins to blow, when the glass rushes up from 80° to perhaps 110°, and the fiery breath from the desert has been known to turn a field of verdant grass to sapless sand in the course of a few hours. The Australian summer morn often opens with brilliant skies and a glowing but quiescent atmosphere. As the day advances the hot wind begins to blow, at first fitfully, but soon with a scorching, consuming, furnace-like blast. Clouds of fine red dust darken the sky, and settle down upon field and town. The sun hangs like a disc of blood from a firmament of fire. Towards sunset the hot wind often slackens its fiery breath. Dense cumuli gather along the

southern horizon, and ere long from the polar seas up rushes the cool south wind, and the thermometer drops thirty or forty degrees in as many minutes. Such days constitute the real blot upon the Australian climate, and it would be disingenuous to minimise their distressing character. But it must be borne in mind that these days are quite rare even in summer, and are practically unknown at other seasons. Melbourne is credited with fourteen hot wind days annually, Sandhurst with eleven, while at Ararat there are but eight, and the number falls to six at Ballarat, and three at Alberton. It seems clear, also, as already indicated, that the hot wind, however disagreeable, is healthful to the healthy. It acts the part of scavenger, sucking up hurtful emanations, draining marshes, and disinfecting the products of decomposition.

*c. Dust.*—This is a serious annoyance both on the plains and at the coast, and is likely to be particularly hurtful to the *poitrinaire*. It is much less annoying in the highland regions, but its general prevalence is a distinct drawback to the Australian climate, and is one of the penalties inseparable from a hot and dry climate.

*d. Sunshine.*—The long hours of cloudless sunshine at all seasons are a marked feature of the Australian climate, and are, no doubt, in a large measure, the secret of its salubrity. In no country in the world is the sky so seldom overcast, or the interruptions to the pursuit of business or pleasure so few. The

modern views regarding solar energy render this fact one of the first importance to the consumptive.

*e. The Mildness of Winter.*—Snow and frost are rare upon the lowlands and coast of Australia, and in many places are quite unknown. Children have been known to salute the rare snowfalls as “wool” or “white rain.” On the mountains, of course, there is abundance of snow, and often severe cold.

*f. Geological Formation and Vegetation.*—The climate of Australia is favourably affected by the nature of the geological formation and the prevailing flora. Volcanic action has been widespread in Australia, and calcareous, basaltic, granitic, and metamorphic rocks enter largely into the formation of the soil, which is thus favourable to health. Damp, impermeable clay soils are quite exceptional. Scarcely less efficacious, in a sanitary sense, is the prevailing flora. The vast forests of gum, and the dense mallée scrub exhale volatile principles which possess remarkable oxidising and disinfecting properties. The gum has been shown to drain marshes, destroy miasmata, and rob morbid germs of their virulence. Introduced into the marshlands of Italy and Algeria, its presence has brought health and fertility, banishing malaria, and rendering aguish districts habitable to man. There can be no doubt that Australia owes its immunity from many of the pests of hot countries largely to the prevailing character of its vegetation.

HEALTH IN AUSTRALIA.—Turning from climate to

health we find strong evidence to justify the high repute of Australia as a sanatorium. The average death-rate in the colonies is reckoned at 14 per 1,000, or about two-thirds of the British average. Typhus fever and hydrophobia are still happily unknown in those regions. Small-pox, although repeatedly introduced, has hitherto failed to obtain any permanent lodgment. Diseases of the respiratory organs claim only about half the number of victims which fall to their share in the British Islands. Scrofula and rickets are rare, tried by the British average. Of consumption we shall speak more fully subsequently. Looking at the reverse of the picture, we find that diphtheria is common and virulent. Scarlatina and measles have frequently made great ravages. Typhoid is moderately prevalent. Diseases of the digestive system exceed the home rate, the liver being frequently attacked, and parasitic disease—especially hydatids—is common.

In estimating the value of such facts, many circumstances require to be taken into consideration. In a young, sparsely-populated, and comparatively uncultivated colony, the conditions of life and of hygiene are widely different from those prevailing in countries of old-established civilisation. Such a colony has the advantage of a pure atmosphere, uncontaminated by overcrowding, or the waste products of extensive factories; it possesses abundance of cheap food, plenty of fairly remunerated employment, and a comparatively free and unsophisticated mode of life.

On the other hand, Australia suffers from droughts and floods, from the deficiencies of a primitive hygiene, from an imperfect water supply, from many forms of privation, and, in some places, from the lack of adequate medical aid. Alcoholism is one of the great evils of young countries, and Australia is a serious sufferer from its ravages. We have also to remember that the population of a young colony presents some exceptional features. On the one hand, the bulk of the settlers are adults of healthy physique, while on the other hand, it must be remembered that the death returns of Australia have been much swollen in recent years by the ever-increasing volume of invalid immigration.

After making all deductions, however, we shall see no reason to doubt the high average healthfulness of the Australian climate. It is beyond question that in bush life many settlers enjoy perfect health on the scantiest fare and amid constant privation. The climate allows the maximum of healthful outdoor activity, and sleeping in the open air is not only possible at all seasons, but wholesome and enjoyable.

The normal incidence of consumption in Australia demands more detailed consideration. It is a point around which violent controversy has raged and still rages. Some leading medical authorities in Melbourne and elsewhere still maintain that the climate has a prophylactic influence upon those hereditarily predisposed to consumption, and exercises a retarding,

and sometimes a curative, effect upon the fully-developed disease. Others deny utterly that it possesses any such virtue. Let us endeavour to elicit the facts of the case. It seems certain that in the early days of colonisation the disease was remarkably rare. It is no less certain that it is now quite common, especially in the large towns. Observations extending over the period from 1850 to 1875 showed that in Victoria for every 100,000 of the population, 126 died of consumption, the British rate being 256, or about twice as much. The figures published by the Medical Society of Victoria for a given period of five years show about the same average. This report states that the proportion of cases of consumption to 10,000 people living is 12·60 for Victoria, as against 22·83 for England. Taking a single year (1833) we find for every 10,000 of the population 13·21 cases of consumption in Victoria, but 22·91 in England. Turning to New South Wales we find in one year (1883) 941 deaths from consumption in a population of 869,310 souls, a mortality only slightly exceeding 1 per 1,000, whereas the rate in England varies from 3·2 per 1,000 in London, to 2·2 per 1,000 in some of the agricultural counties. South Australia affords parallel averages. In 1883 the colony had a population of 304,515, with a mortality from consumption of 313, or about 1 per 1,000.<sup>1</sup>

If these statistics can be trusted (and the colonial

<sup>1</sup> Bonwick.

statists deservedly enjoy a high reputation), it seems impossible to resist the conclusion that consumption is far less rife in the Australian colonies than in the home country. No doubt it is increasing at a significantly rapid ratio, and it is conceivable that with the growth of population the mortality from this cause may yet approximate to the British standard. But we are concerned not with the possibilities of the future, but with the certainties of the present, and it does not seem open to serious question that Australia now enjoys a relative immunity from consumption.

When we compare the returns for the capital towns with those for the colonies as a whole, we obtain some surprising and instructive results. Thus, in the year 1883, the mortality from consumption in Melbourne was 2·2 per 1,000, while that for the rest of Victoria was only ·871—a truly startling and significant contrast. In the same year, Adelaide had a mortality from the disease of 2·8 per 1,000, while the rate for the entire colony of South Australia (including the capital) was only a trifle over 1 per 1,000. The conclusion which such returns suggest is that in the capital cities of Australia consumption is almost as prevalent as in the British Islands (which illustrates our cardinal doctrine, that *large centres of population are absolutely inadmissible as sanatoria for consumption*), while in the country districts of the colonies the rate is far below the British average.



Note this contrast—

*Mortality from Consumption.*

London . . .	3·2 per 1,000	Melbourne . .	2·5
Rural England .	2·5 to 2·2	Rural Victoria .	·87

The obvious inference is that the climate of inland Australia is favourable for the consumptive, but that the large cities upon the coast possess no decided advantage over the home country.

The report from some of the small inland towns in Australia is remarkably favourable with regard to the incidence of consumption. A medical practitioner of Chepstow, a small township in Victoria, at the height of 1,500 feet, reports only one fatal case of consumption in eight years' practice. Burra, in South Australia, with a population of 8,394, had in the year 1883 only three fatal cases of consumption. Angaston, in the same colony, with a population of 5,111 had in the same year only one death from the disease.<sup>1</sup>

In weighing the significance of the wide prevalence of consumption in the colonial capitals as compared with the rural districts, we are confronted with the great difficulty arising from our inability to determine how many of these cases are imported, how many developed on the spot. The medical testimony is conflicting. The estimate made by the Melbourne doctors of the proportion of imported cases varies from two-fifths to nine-tenths—a sufficiently wide

<sup>1</sup> Bonwick.

discrepancy. There can be no doubt that the returns from Melbourne, Sydney, and Adelaide, are very largely augmented by the number of consumptive invalids who arrive only to die, but making due deductions on this score there remains amply sufficient evidence to warrant the conclusion that these cities are themselves entirely unsuitable for cases of consumption.

Australia being thus shown to possess certain advantages in consumption, it becomes important to inquire how these advantages can be best utilised. To tell a patient to go to Australia for consumption is like suggesting to a dyspeptic that the pharmacopœia probably would afford him some relief. A judicious choice of locality is as important in the one case as the proper selection of drugs in the other. It has already been shown how various are the physical features of Australia, and what different kinds of climate may there be found. To recommend the country generally without distinction of locality is to exhibit unpardonable ignorance, and to turn the climatic treatment of disease into a burlesque. Let us glance at the special advantages and drawbacks of the three natural physical divisions—Coast, Mountain, and Inland Plain.

As regards the coast, the first point to be emphasised is that the capital towns are wholly unsuited for the consumptive. We have seen how fickle is their climate, and how heavy their proportionate liability to consumption. In nearly every case the con-

sumptive lands at Melbourne, Sydney, or Adelaide. Imbued with the delusive idea that the colonies are uniformly efficacious in his malady, ignorant of the peculiar advantages of the less known localities, and perhaps tempted to remain in the vicinity of friends and within the range of pleasure and amusement, he settles in one of the capital towns, and ere long, in the vast majority of cases, succumbs. Still more pitiable is the case of that large body of young men and young women who have to work hard for their maintenance, and who have developed consumption in consequence of hard work in the foul air of some indoor trade. They go out to Australia in large numbers, and, landing in one of the capital cities, too often seek occupation similar to that to which they owe their malady more than to any climatic cause. Death is, in nearly every case, the result. The consumptive, who resorts to Australia, must accept as an axiom the principle that he must avoid all large centres of population, and refrain from engaging in any indoor occupation. If he declines these conditions, the most merciful course on the part of the medical practitioner is to tell him to die at home.

Excluding the capital towns as wholly inadmissible, there remain some localities on the coast which may be expected to prove useful in certain cases of consumption—especially when there are troublesome complications. Eden in New South Wales, and Alberton in Victoria have mild and sheltered climates

—somewhat moister than is usual in Australia, but possessing the great advantage of comparative immunity from the hot wind. For cases that can bear a fairly bracing marine climate, Belfast or Warrnambool in Victoria may be recommended. In the country which slopes up from the margin of the sea to the foot of the great mountain-range are various salubrious spots—such as Kyneton in Victoria (elevation 1,750 feet) and the inland portion of the Illawara in New South Wales.

On the whole, the littoral region of Australia cannot be recommended to the consumptive. The climate is too fickle—the variations in hygrometric state being especially marked—too much the sport of contending winds, and possesses only in an inferior degree that dryness of the atmosphere which for certain cases is one of the merits of Australia as a health resort.

The mountain-region next claims attention. There can be no doubt that it possesses many places where the meteorological conditions are highly favourable in chest affections; but we lack precise information and some of the most favoured regions are either almost inaccessible or destitute of adequate accommodation. Mount Victoria in New South Wales and Mount Macedon in Victoria (already mentioned), present many advantages as summer resorts, and the hilly country of New England in the former colony is said to possess an admirable climate. Of mountain resorts in Australia suitable for winter, the writer

knows none, but does not doubt that such may yet be found. At this season the mountains for the most part are deluged with rain and swept by winds, rendering them wholly unsuitable for the consumptive. No place has yet been described in Australia which possesses any climatic conditions in winter comparable with those of the Higher Alps.

We have thus seen that the littoral region and the mountainous districts of Australia are far from affording ideal quarters for the consumptive. But the great inland plains, either of the Riverina of New South Wales, or the Darling downs of Queensland, constitute a genuine sanatorium. In many cases the consumptive who resorts thither soon feels the stimulation of the climate which makes toil easy and existence a delight. Surrounded by a hive of busy workers he is ashamed to remain a drone. Insensibly he lays aside his long-cherished invalidism. He learns to ride "bucking" horses, he makes long excursions to the outlying huts of distant shepherds, he joins in the kangaroo hunt or the emu chase, he begins to marvel at his appetite, and his weight increases so rapidly that he can hardly credit the record of the scales. In the cure thus frequently wrought, the climate is only one factor of the process. The open-air existence, the vigorous exercise, the forgetfulness of self and of disease, born of newly-found interest in life, the plain and abundant food—all these contribute their quota to promote recovery from a disease which in some cases at least is a mal-

nutrition, a *dystrophia* first, and a pulmonary affection second.

No doubt disappointment sometimes results, and consumption claims its victims even on the downs of the Darling and the Murrumbidgee. But almost every squatter's house has, or has had, its invalid visitant, and no one can travel through the interior of Australia without being profoundly impressed with the unshaken faith of the settlers in the virtues of their climate. Cases of failure and ultimate death often on investigation confirm, rather than undermine, our faith in the efficacy of the climate. The tale usually is that the invalid either arrived at the "station" in the last stage of weakness and perished before healthy reaction could set in ; or content with partial improvement and wearying of the monotonous life, he prematurely deserted the bush, and repairing to Melbourne or Sydney speedily made shipwreck of all his gain, and either sank into a premature grave, or sailed for home with maledictions on a country whose blessings he unhappily misused.

The consumptive need not repair to the inland plains, unless he is prepared to acquiesce in the life, and imitate the habits of his generous entertainers. The bush is no place for the fine gentleman, or the fastidious invalid. The stranger who resorts thither will be received, indeed, with boundless hospitality but he will be expected to know something about self-help, to be content with simplicity of life, to value wholesome plenty more than luxury, to check

the rising murmur, and to join in the pleasures, and after a time in the labours also of his host. In such points lies his salvation, but to this he is apt to be blind. The main drawback to the plains is the high range of summer heat. If relief from this be found indispensable, resort may be had to the hills, or to Tasmania, which is indeed "a covert from the heat" for the Australian during the fiery blasts of summer.

It is regrettable that invalids so generally arrive in Australia during the summer, which is, without doubt, the most treacherous and least agreeable season. The motive is obviously rather to escape the winter of the northern hemisphere than to time most prudently the period of arrival; but the invalid who lands in Melbourne or Sydney during Christmastide, or in the torrid heat of January, finds himself somewhat embarrassed by difficulties. He desires to see the new country, but he finds the climate of the capitals variable and disappointing, and he is deterred from venturing inland by reports of intense heat, bush fires, and perhaps drought. Tasmania is open to him, but possibly he hears that every steamer to Launceston is crowded, and every bed in Hobart occupied. He is thus tempted to loiter about Melbourne or Sydney, perhaps to join in the boisterous gaieties of their mid-summer season, and he will be fortunate if within a month or two he has not wholly sacrificed the benefits of the voyage, and seriously mortgaged his future prospects.

If the time and circumstances of arrival were alone



to be regarded, probably the month of March would offer the greatest advantages as the period at which to commence residence on Australian soil. It is the most charming season of the year. The heat of summer has given place to a bright and genial atmosphere, and the parched plains are again clothed with flowers and verdure. The climate of the littoral towns is then more equable than at other periods, and, as the autumn draws to a close, the invalid can go inland and enjoy the admirable winter climate of the Riverina or of the Darling Downs of Queensland. This latter region, an elevated plateau, 2,000 feet above the sea, and well removed from disturbing marine influence, is now a favourite sanatorium with colonial authorities. Toowoomba, 102 miles west of Brisbane, is the principal town. The pretty township of Warwick also enjoys a high repute. But unfortunately for the observance of this programme, arrival in Australia in March means departure from England in December or January, and this arrangement would involve the prolongation of residence at home beyond the period of safety. The consumptive may be advised to spend the early winter months in Southern France or Italy, and then take steamer from Marseilles or Naples towards the end of January. Another possible plan would be to leave England by sailing vessel in July, or by steamer in August, thus arriving in Australia in October. The Australian spring rivals the freshness and geniality of the autumn, and the invalid who arrives at this season will have the opportunity, before

the advent of extreme heat, of learning enough of the country to enable him to arrange prudently his summer programme.

The general principles which should guide the consumptive in Australia may be summed up as follows. He must carefully shun a prolonged residence in any of the large centres of population. Only in exceptional cases (each of which must be judged upon its merits by a competent medical authority) will he be well advised in fixing his residence at any place upon the coast. In the vast majority of cases he should obtain an introduction (always easy to procure) to some squatter upon the great inland plains, and settle upon a sheep 'station,' with a determination to throw off his invalidism, lead an active open-air life, and prolong his stay either indefinitely, or at least until assured on medical authority that his cure is complete. He should not arrive during the summer, since, in addition to the discomfort of the heat, diarrhoea and other intestinal affections are very common at this season, and are particularly prone to attack the new-comer. If these rules of conduct be observed, a cure may, in a considerable proportion of cases, be confidently anticipated. On the other hand, for a consumptive merely to make a brief tour through Australia, spending most of his time in the hotels of the large towns, and following a mode of life as nearly as possible identical with that pursued by him at home, is perfectly futile and often wholly injurious. It is pitiable to reflect how many have thus, through ignorance,

thrown away the chance of life which was afforded to them.

What cases of consumption do best in Australia? As the applicability of the various climates to the different types of the disease will be hereafter considered at length, this question can only be glanced at here. Australia may be recommended to those cases of incipient consumption, where the mountain treatment is either unsuitable or is rejected by the patient. Owing to its heat and its highly stimulating action, the climate is not suitable to cases with serious hepatic or intestinal troubles, or for decidedly neurotic constitutions. Strumous cases do very well in Australia. If the patient has been fond of out-door sport, is not a dilettante in manners, or an epicure in food, can rub shoulders with miner, shepherd, or artisan, is willing to sacrifice at the altar of health many of the luxuries and some of the comforts of civilisation—he may be safely advised to resort to Australia.

The considerations of Australia as a sanatorium for consumptives may appropriately conclude with a brief glance at the attractions which it can offer in the way of scenery, hotel accommodation and facilities for travel, and such other points as, although less vitally important than climate, nevertheless seriously affect the comfort and happiness, and therefore the health, of the invalid.

First, as regards scenery. With some exceptions, such as the wild beauty of the Blue Mountains, the

flowery slopes of the Illawarra, or the primeval forests of Gippsland, the country as a whole is singularly deficient in picturesque scenery. It is a land of rich gold mines, of agricultural plains whose fertility makes them one of the granaries of the world, of illimitable expanses of down and scrub where wander the countless flocks whose fleeces supply the wool-markets of London and New York ; but it has little to charm the eye or stimulate the imagination. The general aspect of the country is in the main monotonous and uninteresting. The "eternal" gum-tree has passed into a proverb. The vast treeless expanses of pastoral downs, the great corn-lands, the immeasurable desert, are one and all monotonously ugly. The rivers of Australia are wild torrents in the rainy season, at other times for the most part mere *catenæ* of mud-holes. Her lakes are desolate sheets of brine.

On the principle of *audi alteram partem* it may not be amiss to quote the following ingenious eulogy by an eloquent Australian writer of the natural beauties of his native land : " In Australia alone is to be found the grotesque, the weird, the strange scribblings of Nature learning how to write. Some see no beauty in our trees without shade, our flowers without perfume, our birds which cannot fly, and our beasts which have not learnt to walk on all fours. But the dweller in the wilderness acknowledges the subtle charm of this fantastic land of monstrosities. He becomes familiar with the beauty of loneliness. Whispered to by the

myriad tongues of the wilderness, he learns the language of the barren and the uncouth, and can read the hieroglyph of haggard gum-trees, blown into odd shapes, distorted with fierce hot winds, or cramped with cold nights, when the Southern Cross freezes into a cloudless sky of icy blue. The phantasmagoria of that wild dreamland termed the Bush interprets itself, and the poet of our desolation begins to comprehend why free Esau loved his heritage of desert sand better than all the bountiful richness of Egypt."

This is ingenious, picturesque, eloquent ; but it does not hide the fact that the best-known portions of Australia are very ugly. Australian scenery is not only lacking in natural beauty, but it is almost wholly destitute of those charms of association which invest the most homely scenes with a subtle enchantment. The native Australian, sunk almost to the level of the beasts, possessed no trace of the imagination of "the lively Grecian in his land of hills" to people his rivers and forests with genii and patron deities. No Olympian conclave sits on the summit of Mount Kosciusko. No nymph presides over the fountains of the Murray or the Yarra-Yarra. Australia can boast no ruined castles surmounting vine-clad summits, no poetical associations, no legends of martial daring or constant love. Her past is a blank. The palæontologist may yet decipher from the woods and caves something of her forgotten ages, but it is unlikely that such discoveries will present much that will be either interesting or important.

Yet the intelligent traveller through Australia will not find all barren or be tempted to exclaim, "*Climate et præterea nihil!*" Lacking in physical beauty, the country presents many problems of great interest to the student of human life and human manners. Here is a land of great natural capabilities, colonised by a race the foremost in the world for energy and vitality—what more interesting problem than to inquire in what manner they are solving the primary questions of existence, what are their modes of agriculture and trade, their special characteristics, and their peculiar laws? In countries of old civilisation, society, manners, laws and government are so crystallised and stereotyped, so firmly moulded by custom and inheritance, that the fundamental and elementary principles which underlie all law and all custom are lost to sight; but in newly colonised countries these primary elements appear on the surface and make their inherent vitality felt. Australia will disappoint the painter or the poet, but the politician, the philosopher, or the sociologist will find her full of interest and instruction.

In one respect, Australia is an extraordinary country. No known land was poorer in indigenous plants and animals. In no land have imported plants and animals flourished with more marvellous fecundity. Originally, Australia had scarcely a tree but the gum and the wattle, scarcely an edible fruit or vegetable, scarcely an animal but the marsupials, and few birds except those of the parrot tribe. Now

nearly every British tree, fruit and animal flourishes on Australian soil. The apple, the plum, the mulberry and the grape attain an unexampled luxuriance under the Southern Cross. The sheep of Australia are numbered by millions. Her cattle cover a thousand hills. Rabbits in countless myriads swarm in her sandhills and threaten destruction to her pastures. Every autumn her broad flat plains, so unlovely to the eye, wave with a golden harvest which feeds the markets of the world.

The facilities for travel in Australia are yearly improving, but still leave much to be desired. The railway system has been rapidly developed, but travelling is slow, and the accommodation *en route* somewhat primitive. On the main trunk lines only two trains run each way daily, and the speed does not exceed twenty miles per hour. Melbourne and Sydney are now connected by rail, and ere long the iron road will join the former city with Adelaide. Dust and heat in summer, and floods at other seasons, render railway travel in the colonies occasionally disagreeable, if not hazardous.

Where railways have not penetrated, the traveller in Australia travels perforce by one of "Cobb's" coaches. These vehicles are not pleasant to the eye, still less are they agreeable to their occupants, but they have the sovereign virtue of successfully resisting the wear and tear of the Australian bush-road. To those accustomed only to the well-beaten highway of civilisation, the bush-road is a revelation. It is a road



by courtesy, but in more accurate language it might be described as an almost imperceptible track through virgin forest, here mounting a rugged height, there plunging into an apparently impassable gulley; blocked now by fallen gum-tree, again by broken bridge or foaming torrent.

Intercolonial travel is still carried on mainly by steamer, and in times not very ancient the steamship services were far from efficient. But of late great improvements have been introduced, and fairly appointed vessels now ply between the various capitals. Extreme overcrowding during the holiday season is one of the most disagreeable features incident to colonial travel.

In hotel accommodation Australia lags behind America and the chief countries of Europe. Even in the principal towns the accommodation is far from being unexceptionable, and in country districts the traveller has to be content with a very indifferent type of rural inn. The food supply is more abundant than choice. Meat, especially mutton, is extremely cheap and good. Beef is somewhat dearer and less choice. Fish is neither plentiful nor of fine quality. Melbourne boasts of its schnapper, Hobart of its trumpeter, and the Riverina of its Murray cod; but the colonist in his more sober moments speaks regretfully of the salmon, the turbot, the sole, and the whiting of the home country. Vegetables are neither so good, so varied, nor so abundant as they should be in Australia, their cultivation being

left almost exclusively in the hands of the Chinese. Fruit is most abundant and of unsurpassed excellence.

To sum up the merits and demerits of Australia from the point of view of the invalid. The climate is one of high average healthfulness, but the heat of summer is excessive, and the hot winds and dust storms are both a danger and an annoyance. The climate of the coast towns is subject to sudden perturbations, and cannot be highly recommended, but the great inland plains constitute a health-resort of high value and proved efficacy. The facilities for travel are still defective, but every year will see a marked and progressive improvement. The catering for the table in Australia is characterised rather by abundance and wholesomeness than variety or luxury. In point of interest for the traveller the colony cannot compare with the countries of old civilisation and the accumulations of unnumbered ages, but it is not without a charm of its own, especially to those somewhat *blasé* with the more stereotyped attractions of Europe.

It is but just to add that the hospitality of the colonists is boundless, and although the traveller or invalid finds the aspects of nature strange and bizarre, although he feels far from home and thinks with some sinking of heart of the long wastes of ocean which he has traversed, and which he must

cross again, yet from the moment of landing in Australia he finds himself not merely among familiar institutions and people of his own blood and tongue, but among genuine friends who treat him with unbounded hospitality, true friendship, and real affection.

## CHAPTER VII.

### TASMANIA.

TASMANIA is a heart-shaped island about the size of Ireland or Ceylon. It consists of a central plain, flanked on the east by a mountain range, of which the peaks attain an altitude of 5,000 feet, and on the west by a high tableland, from which ridges of lofty mountains diverge towards the storm-beaten western seaboard. It possesses numerous fine rivers, an indented coast peculiarly rich in harbours and inlets, many extensive lakes, and abundance of forest. The surface of the country is marked by a profuse verdant vegetation, and an alternation of hill and dale, more characteristic of Great Britain than of the neighbouring continent of Australia. In Tasmania there is no monotony of parched plain or ragged gum forest ; the rivers do not lose themselves in the sand, or discharge into desolate lakes of brine ; the eye does not weary of landscapes of unrelieved ugliness. On the contrary, the island is one of the most picturesque little spots in the world, and its

beauties are the more conspicuous by contrast with its great and prosperous but uncomely neighbour.

Five regions claim a brief attention, the northern, eastern, western, and southern littoral districts, and the central plain. The mountainous portions of the island are still too unsettled to attract the invalid.

The northern coast region is the most favoured part of Tasmania. Launceston resembles a prosperous little English country town, and the adjacent country might readily be mistaken for Kent or Devon. Hedgerows of hawthorn and privet (unknown upon the Australian continent) abound, and the air is fragrant with the odour of sweetbriar, honeysuckle, and apple-blossom. There is a verdure on the hills, a softness in the air, a sense of tranquillity and repose, grateful to the traveller after the parched plains of Victoria, and the glare and bustle of Melbourne. Launceston has a mean winter temperature of  $53^{\circ}$ , and an average temperature for the entire year of  $66^{\circ}$ . The rainfall is only twenty-eight inches, but the evaporation is not more than eleven inches, so that the climate must be pronounced moist in comparison with that of Australia, where the evaporation usually much exceeds the rainfall. The summer heat is not excessive, although occasionally the hot winds from the neighbouring continent make themselves unpleasantly felt. Winter cold there is none.

In addition to Launceston, there are many places on the northern coast which enjoy a climate of great

mildness and salubrity. Woolnorth and Emu Bay have a considerable local repute, but before resorting to these less known and still primitive settlements, the invalid should have adequate assurance of obtaining suitable accommodation.

The eastern coast region possesses the same general climatic features as the northern, but feels the hot wind less, and is more under the influence of south-easterly breezes.

The western coast presents a marked contrast to those parts already mentioned. It is a wild and rocky region, exposed to the full sweep of the moisture-laden winds from the west, and in consequence it is torn by storms and deluged by rain. The annual deposition at Macquarie Harbour is fifty-eight inches, and at Mount Bischoff seventy-five inches. The climate is not unhealthy for normal constitutions, as the returns from some of the old penal stations amply prove, but it is obviously quite unsuitable for the consumptive.

The southern coast resembles the western in being rather windy, but the rainfall is much less—the deposition at Hobart only amounting to twenty-seven inches. The climate of the capital, Hobart, has been lauded to the skies. The situation of this charming little town is exceedingly felicitous, resting as it does upon the noble estuary of the Derwent, and overshadowed by the imposing mass of Mount Wellington. The mean annual temperature is  $55^{\circ}$ , the monthly range varying from  $66^{\circ}$  in January to  $50^{\circ}$

in July. The hot winds are less felt than at Launceston, and there is little winter cold. The winter season resembles a mild English autumn. Yet Hobart has by no means a perfect climate, its chief defect being its somewhat variable character, and the undue prevalence of cold south winds.

The central plain, being in close juxtaposition to the mountain ranges, has a more bracing climate in summer, and a lower range of winter temperature than the coast regions. Oatlands, fifty miles north of Hobart, at an elevation of 1,340 feet, has a good tonic climate.

Tasmania is undoubtedly a very healthy island. The death-rate is only about fifteen per 1,000, and there is a complete immunity from endemic disease. The infant mortality is very low, and instances of remarkable longevity are common. The island has long been the favourite sanatorium and playground of the Australian colonist, who finds in its breezy coast, sheltered glades, and bracing uplands a welcome and health-giving change from the climatic conditions of his own land. The scenery, ever picturesque and diversified; the climate, ever varying, yet free from extremes; the prevailing atmosphere of restfulness and calm—all unite to constitute Tasmania a natural sanatorium. This last feature is as welcome as it is novel to the Australian. Life in the prosperous colonies of Victoria, New South Wales, and South Australia is full of the rush and bustle of progress, and moves rapidly under the stimulus of the gold



mine ; but Tasmania is the modern Sleepy Hollow. Even the capital, Hobart, is characterised by a notable absence of the hum and excitement usually associated with colonial cities. Twice daily the little train arrives from Launceston ; occasionally a steamer calls from Melbourne or Dunedin, and causes a commotion among the jam manufacturers ; more rarely a whaler casts anchor in the Derwent returning from the pursuit of Antarctic leviathan ; but it would be difficult to choose a spot where the invalid can more readily abandon himself to a life of quietude and “dreamful ease.” The annual summer influx of tourists, flying from the torrid heats of Australia, causes a temporary ripple on the tranquil surface of Tasmanian life, but with March the birds of passage depart, and quiescence—not to say torpor—reigns again. The enterprising emigrant will shun Tasmania for the very reason which commends the island to the invalid, who seeks not fresh fields for labour, but a place of rest, where bright skies and healthful airs may hasten his convalescence and sweeten his repose.

While Tasmania possesses many of the scenic and climatic requisites for an excellent sanatorium in various maladies, its applicability to the case of the consumptive is more doubtful. The mortality from consumption is, indeed, low—only 137 deaths being recorded from the disease in the year 1883 out of a population of 126,220 persons, or a little over one-third the British rate. But it is a significant fact that,

when the Tasmanian develops consumption he almost invariably retreats to Australia, a custom which could hardly persist unless warranted by specific reasons. Theoretical considerations also would lead us to question the suitability of Tasmania as a permanent residence for the consumptive. The climate, although much drier than that of Britain, must be reckoned damp in comparison with that of Australia, the rainfall everywhere largely exceeding the evaporation. It is also a windy climate, and while free from extremes of heat and cold, peculiarly subject to sudden fluctuations within a limited range. Thus, while Tasmania is an excellent temporary refuge for the consumptive during the prevalence of extreme heat in Australia, he should not, as a rule, be advised to take up his permanent abode there. His prospects of recovery are decidedly more hopeful in the Riverina or upon the Darling Downs. If for any personal consideration the consumptive invalid elects to settle in Tasmania, he should choose the northern or eastern portions of the island. Launceston offers many advantages, and its small size and lack of manufactures free it from many of the disadvantages which beset a residence in towns. The neighbouring county of Devon is a charming region with a most agreeable climate. The west coast is entirely unsuited to the consumptive, and the southern region is too much a prey to cold winds. Some of the inland regions present advantages to those cases in which there is

freedom from complications and a capacity of response to a bracing climate, but their condition is still so primitive that the invalid must, before venturing thither, assure himself that adequate accommodation is likely to be obtained.

## CHAPTER VIII.

### NEW ZEALAND.

TO the average Briton the triplet of beautiful islands, to which fate has given the ridiculously inappropriate name of New Zealand, forms simply an ordinary member of the Australasian group of colonies. He does not reflect that between Australia and her great sister rolls an ocean almost as broad as that which separates Ireland from Labrador; and he is in many cases quite ignorant that in scenery, climate, and natural productions, the points of resemblance between the two are far outnumbered by their points of contrast. Australia is in the main a flat country; New Zealand is traversed for hundreds of miles by one of the most magnificent mountain ranges in the world. Australia is a land of desert, drought, and bush-fires; New Zealand has no deserts, and knows nothing of the miseries of prolonged water-famine. Australia has a summer of intense heat; the climate of New Zealand is in the main temperate. Australia is the country of the "everlasting gum

tree"; New Zealand is the "great fern land." Yet they resemble each other in the possession of gold, innumerable sheep, and great facilities for the cultivation of wheat; but from the point of view of medical climatology it is better to forget that social and ethnological considerations have rendered New Zealand a sort of *annexe* to Australia, and to regard it as an essentially different and contrasted country.

As the islands constitute a thin strip of country extending through  $13^{\circ}$  of latitude, we must expect to find in New Zealand widely different types of climate. The most northern portions are as near the Equator as Morocco, while the southern parts occupy in the southern hemisphere a situation analogous to that of Switzerland in the northern. In making such comparisons it is necessary, however, to recollect that the southern hemisphere is, *cæteris paribus*, colder than the northern. Thus the climate of Auckland does not possess the excessive heat of Fez, but might rather be compared with that of Montpellier or Nice; while the province of Southland resembles in climatic conditions not so much Switzerland and France as Scotland or Ulster. This contrast between the climates of the two hemispheres at corresponding latitudes has been variously explained, but the fact itself is certain, and must never be forgotten in estimating the climate of Australia, Tasmania, and New Zealand.

It must also be borne in mind that New Zealand presents almost every variety of plain, plateau, and

mountain, and therefore includes within her borders a vast variety of climatic types, determined by elevation. The eternal snow of Mount Cook looks on one hand upon the dripping coasts of Westland, and on the other upon the broad Canterbury Plain, one of the driest regions in the colony, where at times it blows a hot wind comparable to the African sirocco or the Australian "brick-fielder." The lofty plateaus of the New Zealand Alps and the lesser elevations of the North Island no doubt afford unexplored and undescribed varieties of almost every possible climate.

Speaking generally, New Zealand possesses a breezy, humid climate, free from great extremes but subject to sudden and sharp fluctuations. There is little cloud, less fog, a large proportion of sunshine, and a freshness and exhilaration in the atmosphere, of which the colonists speak in terms of justifiable enthusiasm. In the warmest regions the thermometer but little exceeds 80° F. of shade temperature, and the devastating droughts of Australia are practically unknown. In the coldest regions—at least on the lowlands—heavy snowfalls and prolonged frosts are altogether exceptional. In the North Island the mean temperature of summer is 64°, and of winter 51°—the mean average range for the year being 58°. In the Southern Island summer has a mean temperature of 59°, winter of 44°, and the entire year of 52°. These figures represent high average equability, but are not inconsistent with considerable variations.

Indeed, the weather in New Zealand is almost as capricious as in the British Islands. A day of Italian warmth and dryness may be succeeded by one whose damp and rawness suggests the Hebrides or Shetland. A brilliant morning may be the precursor of a stormy deluge in the afternoon. Winter and summer, as in the home country, are provisional terms, which do not admit of confident prediction and often scorn the regulations of the almanac.

The prevalence of wind is perhaps the most notable feature in the New Zealand climate. Her coasts are wind-swept; her seas storm-tossed. Perhaps in no other part of the world is there such active atmospheric circulation—a fact that is explained by the loftiness of the mountains and the constant proximity of the sea. Wherever we go in New Zealand, we are rarely out of sight of towering peaks or beyond the range of marine influence.

The rainfall is everywhere considerable, and in many districts excessive. Westland has an annual rainfall of over one hundred inches, Nelson of sixty inches, Taranaki of fifty; but on the east coast the average falls to about thirty inches at Napier and Christchurch, and this figure may be taken as representing the irreducible minimum of the colony. The large rainfall finds its explanation in the lofty hills which intercept the moisture-laden ocean winds, and in the vast extent of the primeval forests of New Zealand.

Earthquakes are not rare in the great Fern-land,



being especially frequent in the neighbourhood of Wellington—a danger which the capital owes to the proximity of active volcanoes.

Making every deduction on the score of variability, tempestuousness, and humidity, the New Zealand climate remains one of great charm. Perfect days are common; long spells of delightful weather are far from rare. The climate interferes little with pleasure, less with labour, and is undoubtedly promotive of a high type of physical vigour.

The climate of Auckland is warm and humid, grateful to many invalids but somewhat enervating to the healthy, and unsuitable to those morbid conditions in which a tonic influence is desirable. The mean annual temperature is 59°. January (the hottest month) ranges from 52° to 86°; April from 45° to 79°; July (the coldest month) from 37° to 65°; October from 39° to 70°. <sup>1</sup> The sun-heat in summer is occasionally very great, while at the coldest season ice never forms. The rainfall is forty-four inches.

Tauranga, on the Bay of Plenty, has a somewhat more tonic and hardly less luxurious climate than Auckland.

Hawke's Bay, with its capital, Napier, on the east coast, has one of the best climatic records in the colony, and has of late put in a strong claim for consideration as a sanatorium in consumption. The

<sup>1</sup> For statistical information of this kind about the colonies, the author relies mainly, but not exclusively, upon Bonwick's work.

climate is comparatively dry, equable, and mild. The thermometer rarely exceeds  $90^{\circ}$ , and never touches freezing point. The rainfall is thirty-two inches. A lofty range, the Ruahine Mountains, shelters this district from the wild wet winds of the west, and the prevailing breezes are easterly. The climate is free from that roughness and rawness which (as compared with Australia) characterise the meteorological conditions of New Zealand as a whole.

Taranaki, on the opposite coast, has a bracing and exhilarating climate, but is windy and rather damp.

Wellington is noted for its storms and its earthquakes. The wild west winds rushing through Cook's Strait here encounter the breezes from the east, and excite frequent gales and tornadoes of great violence. The average temperature of the month of January ranges from  $51^{\circ}$  to  $80^{\circ}$ ; that of April from  $42^{\circ}$  to  $75^{\circ}$ ; of July from  $34^{\circ}$  to  $60^{\circ}$ ; of October from  $36^{\circ}$  to  $74^{\circ}$ . The rainfall averages from fifty to sixty inches. The perturbations of the climate of Wellington are due partly to the situation of the town, and its exposure alternately to wild westerly gales and furious south-easters, and partly to the proximity of active volcanoes. The climate is not a desirable one for invalids, and is quite unsuited to the consumptive.

Nelson, on the northern shore of the south island, has a choice and well-sheltered position, and is described as a sequestered Eden, where Nature teems

with fertility, and where life is free from colonial bustle and excitement. The climate must, however be reckoned damp, as the rainfall exceeds sixty inches annually. Picton is said to possess one of the finest climates in the colony; but it is still an undeveloped district.

Westland is stormy and wet. The wild west winds, alternating with sharp blasts from the overhanging peaks of the New Zealand Alps, constitute a climate which is bracing in spite of great humidity. The rainfall at Hokitika on the western seaboard attains the enormous figure of 160 inches. The climate, though not inconsistent with vigorous development, and not unhealthy to sound constitutions, presents no attractions to the invalid, and least of all to the consumptive.

The Canterbury Plains constitute perhaps the most fertile region in the known world, and the climate is admirably adapted to the British settler. This great plain stretches for a hundred miles from the borders of the ocean to the spurs of the New Zealand Alps, which intercept the moist west winds and give the climate its dryness. Christchurch has a mean temperature of  $55^{\circ}$ ; January ranging from  $41^{\circ}$  to  $85^{\circ}$ ; April from  $36^{\circ}$  to  $72^{\circ}$ ; July from  $23^{\circ}$  to  $62^{\circ}$ ; and October from  $31^{\circ}$  to  $77^{\circ}$ . The rainfall is thirty inches, a small quantity compared with most districts of New Zealand. Floods are not uncommon on these plains; drought is occasionally experienced but is rarely severe; while exceptionally the hot

wind of Australia makes itself felt. On the whole, the climate is bright, bracing, and enjoyable, and most of the conditions of salubrity are present.

Otago has a climate not unlike that of Britain. Dunedin has a mean temperature of  $50^{\circ}$ —the seasonal range being as follows:—January from  $40^{\circ}$  to  $72^{\circ}$ ; April  $37^{\circ}$  to  $72^{\circ}$ ; July  $30^{\circ}$  to  $57^{\circ}$ ; and October  $32^{\circ}$  to  $73^{\circ}$ . The summer heat is considerable, but frost is rare in winter. The rainfall varies from thirty to forty inches. Probably in no part of the colonies do the settlers feel so strongly as in Dunedin that they have emigrated to another Britain, where the rigour of winter is softened, and the skies are bluer and more serene. Southland is a wet and stormy region, with little attraction for the tourist or invalid.

That the New Zealand climate ranks high in point of salubrity, and possesses a peculiar adaptability to the Anglo-Saxon race, are indisputable facts which are not controverted by the rapid decay of the Maori race. No observer has attributed the approaching extinction of the aboriginal New Zealanders to adverse climatic conditions, but rather must this national decay be explained by internecine strife, inadequate food, unhealthy dwellings, immorality, and perhaps not least by that mysterious blight which settles down upon so many of the coloured races when brought into proximity with the white man.

While the New Zealand climate is healthful to the healthy, its application to disease is less obvious

and certain. Especially must we question its claim to rank high as a sanatorium for consumptives. The climate as a whole is windy, humid, and fickle—a combination of meteorological conditions unfavourable to consumption. The claim of Napier to adaptability to chest affections rests mainly on the fact that its climate is unlike that of the rest of the colony, being drier, softer, and more uniform. No doubt many consumptive immigrants from the home country have improved immensely in New Zealand, but this only proves—what no one has ever questioned—that the climate is less promotive of consumption than that of England or Ireland. The recoveries, it should never be forgotten, are due not solely to the climate, but in a large measure to the active open-air life which is so common a condition in the colony. The death-rate from consumption in New Zealand is still only about one-half the British rate, but it is significant that it is steadily rising in all the settled districts, and we can feel no confidence that it will not some day approximate to the home average. The rural districts probably owe their immunity less to the climate than to the sparseness of population and the healthful conditions of life.

The consumptive should not, then, as a rule be advised to select New Zealand as his home. No doubt his prospects of life and vigour will be far better there than at home, but unless there be urgent private reasons to the contrary, he should rather

choose the Riverina of New South Wales or the Darling Downs of Queensland. If reasons beyond the control of the medical adviser determine the consumptive to settle in New Zealand, he should be urged to select some inland district either in Hawke's Bay or the Canterbury Plain. The towns must be avoided at all costs, and as a rule the seaboard is too stormy to afford him a desirable residence.

Many consumptives resort to New Zealand, not for the purpose of settling there, but merely as passing visitors. The writer holds strongly that any temporary sojourn of this kind, limited to a few months, is for any case of fully developed consumption perfectly futile, and is on every ground to be discouraged ; but there are degrees of unwisdom, and the consumptive who decides to spend only a brief period in New Zealand, may spend that time wisely or foolishly. As a rule, such visits should be timed for the New Zealand summer, and the traveller may advantageously pass from Tasmania to Dunedin during any of the summer months. Thence, he may proceed to visit the magnificent lakes, Wakatipu, Te Anau, and Manipori, or perhaps join an excursion to the wonderful Sounds of the western coast. After Dunedin, the Canterbury Plain invites attention, and as autumn draws on the tourist may pass to the northern island and spend some time at Napier or Auckland. If health permit, he will not omit to visit the marvellous hot lake and mud spring region in the neighbourhood of Lakes Tarawera and Rotomahana,

lately the scene of destructive earthquakes. Here he will see steaming lakes, boiling geysers, flaming volcanoes, and everywhere the dark dense fern-abounding virgin forest of New Zealand—a region surpassed in the world for romantic marvels and scientific interest. To travel thus, however, is to use New Zealand as a playground and not as a health-resort. It is time for consumptives and their medical advisers to realise that travel for health and travel for pleasure are widely different, and cannot be undertaken in the same spirit or pursued under identical conditions.



## CHAPTER IX.

### CALIFORNIA.

THE gold state has still but small repute as a sanatorium with European authorities, but it stands high in America, and is likely to be more frequently heard of in future. Northern and central California have little to recommend them to the consumptive, but the southern littoral region from Santa Barbara to San Diego possesses one of the most remarkable marine climates in the world. This district consists of a narrow strip of territory which mounts suddenly from the edge of the Pacific to the great summits of San Bernardino, San Jacinto and Cucamonga—10,000 to 11,000 feet in height—and then sinks even more suddenly to the level of the great deserts of Arizona and Nevada. Northwards is the Mojave desert, southwards the vast burning plain of Sonora. We have thus a narrow region of variable, and in part of great elevation, bounded on one side by ocean and elsewhere by desert. No other known region fulfils exactly the same conditions, and hence the

climate of southern California is quite unique among marine climates.

*First.* It is intensely dry. The great expanse of neighbouring desert, heated by sunshine as fierce as that which plays upon the arid wastes of Arabia, sends aloft a huge column of dry hot air which eagerly absorbs every drop of moisture coming within the range of its influence. The breezes from the Pacific, impinging upon a region much hotter than the ocean from which they have come, carry their moisture aloft (in accord with a well-known meteorological law,) and deposit little or none until they strike the summits of the mountain ranges. Hence the coast region of southern California has none of the humidity which we usually associate with marine climates. During the six months of the long brilliant summer the rainfall is merely nominal, and the rest of the year affords barely a sufficient deposition for the purposes of agriculture. Drought is indeed the great foe of the land, and according to its prevalence southern California affords alternately districts of barren desolation, and, on the other hand, fields, gardens and orchards, smiling with a profusion of herb, plant and flower, which no other region can surpass. The rainfall varies much with the season, and much with elevation. It is larger and more regular in the hilly regions than upon the coast.

*Secondly.* As regards temperature—southern California exhibits the unusual combination of warm winters and summers of moderate heat. In winter

there is usually a little morning frost, less on the coast than inland, but the mid-day temperature rises to from 60° to 80° F., according to the district and to the prevalence of cloud. "The lowest mid-day temperature recorded at the U.S. signal station at San Diego during eight years was 51°. This occurred but once. In those eight years there were but twenty-one days when the mid-day temperature was not above 55°. In that time there have been but six days when the mercury fell below 36° at any time in the night, and but two when it fell to 32°—the lowest point ever reached there."<sup>1</sup> The summer is free from excessive heat, the dryness of the air making the nights cool, and the sea-breeze tempering the sun-heat. "By the sea the difference between the mid-day temperature of winter and summer is hardly above 10°, and in the interior little, if any, above 15°. At San Diego there have been but forty-one days in eight years when the mercury passed 85°, but twenty-two when it passed 90°, but four when it passed 95°, and but one when it passed 100°."<sup>2</sup>

*Thirdly*, as regards winds.—"The most remarkable feature of the whole year is the entire absence of all dangerous winds, and the almost entire absence even of unpleasant ones. The 'norther' is here a dry wind from the desert, generally warm or hot, never cold, though sometimes cool, always excessively dry, and with an unclouded sky. It is rarely over twenty miles an hour, is limited to about twenty or thirty days in

<sup>1</sup> Van Dyke.

<sup>2</sup> *Ibid.*

the year, and is never unpleasant, unless too hot or strong enough to carry grit or sand. With the exception of the 'norther,' the only winds are the regular sea-breeze, and the rain-bearing winds from the south, south-west, or south-east. During eight years at San Diego the wind exceeded twenty miles an hour only about nineteen times yearly. The sea-breeze blows about four-fifths of the year. In winter it is very light, often but two or three miles an hour, while its place is often taken by a dry land-breeze. In summer it is about eight or ten miles an hour, just strong enough for comfort, but not enough to raise dust."<sup>1</sup>

The climate of southern California is thus dry, warm at all seasons without excessive heat, and free from much wind. Add to this the brilliant atmosphere, variety of scenery, and profusion of fruit and flower, and it will be evident that we have here a region worthy of careful consideration as a sanatorium in consumption. Hardly less important than the benignity of the climate are the facts that the country is still mainly pastoral and agricultural, that opportunities for out-door life abound, and that the invalid may possibly find sufficient inducements to settle permanently in the country. It cannot too often be asserted that in a very large proportion of cases of consumption the most perfect climate will be impotent to effect a cure unless the conditions of life be wisely ordered. California shares with Australia the immense advantage of being a country with an English-

<sup>1</sup> Van Dyke.

speaking population, amongst whom the consumptive may settle, obtain suitable employment, and still find life worth living.

The unfavourable aspects of southern California must not, however, be overlooked. Portions of the country, owing to lack of water, are as barren as the Sahara. One season out of every four or five is marked by prolonged drought. Society is necessarily somewhat primitive, but life and property are as secure as in any of the other western states. The three best known towns are Santa Barbara, San Diego, and Los Angeles, the two former upon the coast, and the last a short distance inland upon the main line of the Southern Pacific Railroad. The hotel accommodation, as elsewhere in America, is on the whole excellent, and the facilities for travel, already fairly good, are likely to undergo rapid improvement.

We must look to the profession in America to keep us informed regarding the results of the treatment of consumption in southern California—results which theoretical considerations would lead us to anticipate with considerable hopefulness.

## CHAPTER X.

### THE CAPE.

THE fame of the Cape as a sanatorium for consumptives belongs to a past generation—understanding by the Cape simply Cape Town and its vicinity. But the interior of South Africa, especially the Orange Free State, has gained in favour just in proportion as the reputation of the coast region has waned. Cape Town has, indeed, little to recommend it to the invalid. A curious irregularly-built town, half Dutch, half British, with a flavour of Africa all its own, picturesque scenery, a brilliant but windy and unstable climate—such are the conditions which it offers for our consideration. The sanitation is most defective, noxious odours abound, and destructive epidemics have been not infrequent. The preponderating Dutch element has acted as an obstacle to progress, and the city cannot compare, as regards architectural symmetry, commercial activity, and all the various adjuncts of civilisation, with the chief towns of America or the Australasian colonies. The

chief features in the climate are the brilliancy of the atmosphere and the prevalence of wind. Nowhere do we find a more diaphanous transparency of the air than at Cape Town; nowhere do mountain, coast, and ocean stand out with more luminous distinctness and precision. But the constant windiness is a fatal objection for the consumptive. The peninsula on which Cape Town stands is a centre of atmospheric disturbance, a focus around which the winds of heaven surge without ceasing. The promontory, long known as the Cape of Storms, still deserves that title, and the peculiar aerial phenomena of Table Mountain early attracted special attention. When the south-east wind blows—and it is one of the most frequent—the clouds descend upon the bare flat summit of the mountain in dense masses, constituting the phenomenon well known to the early navigators as the “laying of the table-cloth.” Presently the clouds sweep over the edge of the summit, descending the declivities of the mountain towards the city in feathery masses curiously simulating every variety of cascade and waterfall, and in a few moments gusty blasts sweep through Cape Town and raise vast clouds of penetrating dust. It is evident that a climate with such characteristics presents no advantage to the sufferer from pulmonary disease, and this fact is so generally known that the consumptive who lands in Cape Town is usually advised not to prolong his stay in the city, but to remove to one of the suburbs of which Wynberg is perhaps the most attractive and



most popular. This little village, eight miles distant from Cape Town, lies behind the great mass of Table Mountain in a position of comparative shelter. It nestles amidst forests of pine, oak, and gum ; and the air is perfumed by countless varieties of flowers, a few native, many brought from Holland by the original Dutch settlers, and others imported from India in those halcyon days of the Cape—before the era of the Suez Canal—when it was the halfway-house between England and her great eastern dependency. The climate of Wynberg is brilliant, comparatively dry, and, although windy, less obnoxious on this account than the climate of Cape Town. There is good hotel accommodation. It cannot be recommended to the consumptive for a prolonged residence, but may be properly selected as a place of temporary sojourn by those persons who have come out to the Cape mainly for the sake of the sea-voyage.

In the interior the climatic conditions are widely different. Very favourable reports are given of the climate of the Orange Free State and Bloemfontein its capital,<sup>1</sup> whither consumptives have already begun to resort. The State lies many hundred miles inland, and is far remote from all marine influences. The climate is extremely dry and remarkably healthful. The summer heat is considerable, and in winter the snow occasionally lies for a few days, but the extremes are not sudden or severe. The capital, Bloem-

<sup>1</sup> The author has no personal knowledge of the interior of South Africa, but has talked with many who know it well.

fontein, is described as a quiet, smiling, snug little town in the centre of a vast plain. The water supply is excellent, the hotel accommodation good in quality but limited in extent, and the conditions of life favourable to health and repose. Not many years ago the difficulties of communication made Bloemfontein practically inaccessible to the invalid, the expedition involving a terribly rough coach journey of six days from Grahamstown. Now railways have been pushed on to the borders of the little republic, and no doubt ere long Bloemfontein will be brought into direct communication with the littoral parts. Whether it possesses the properties of a successful sanatorium still remains to be tested. That the climate is favourable to consumption and asthma is probable, but we are still without definite details or statistics.

Some invalids, free alike from the trammels of time and money, have derived great benefit by lengthened excursions into the interior of South Africa in their own "Cape-cart" or bullock-waggon. The expedition is tedious and expensive, several servants are required, supplies of food must be taken, and the traveller must carry all the accessories of civilisation with him. But if he be indifferent to luxury and not too scrupulous about comfort, this mode of life is alike healthful and enjoyable. The traveller lives an open-air life in a warm, dry, salubrious climate. He sleeps each night under his own canvas, fearless of rheumatism or ague. By day, if so disposed, he can arrest his team, and make excursions

sions into the bush to gather botanical or zoological treasures, or go in pursuit of the antelope or buffalo. Appetite and strength return, the cares of the world and the dread of disease are alike forgotten, and not unfrequently a complete restoration to health is effected. This happy result must not be attributed solely to the virtues of the climate, but in part to the simplicity of life and diet, the constant in-take of unpolluted air, the vigorous exercise, and the freedom from worry.

The general scenery of Cape Colony is not attractive, although there are exceptional localities of great beauty, such as the peninsula of Cape Town, the Knysna river, and the Outiniqua mountains. Accommodation and means of transit, although improving, still leave much to be desired ; and the invalid would do well to remember that he is coming to an undeveloped and still primitive land, where European comforts and elegance must not enter into his calculations. The English settlers, unlike the colonists of Victoria and New South Wales, have not had a fair field and a rich virgin soil. They have been hampered by the native difficulty, retarded by the Dutch factor, and embarrassed by the character of the soil and the mountain wilds of the interior.

The fastidious traveller, who values luxury above health, and is offended by a hard bed or a tough beefsteak, had better pass the Cape by. Outside the limits of Cape Town, Port Elizabeth, Grahamstown, and Bloemfontein, he will find little to his

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taste, and the salubrity of the climate will not compensate him for the absence of those comforts which he probably much over-values. But the traveller who sets before him health as his chief object, who is superior to petty discomforts, who can smile at a rough road, and is not rendered miserable by a disappointing dinner—such a traveller may gain much health, and perhaps in addition pleasure and instruction—by a well-planned sojourn in Southern Africa.

## CHAPTER XI.

### ALGERIA.

OF the warm health-resorts for consumptives within easy access of England, Algiers is at present the favourite. Experience has shown the disadvantages attending a winter residence in southern France, and an increasing accuracy of meteorological record has proved the inferiority of sanatoria once so famous as Pau, Nice and Montpellier. Fashion seems to have set in against Egypt and Madeira—a temporary caprice, no doubt, as regards at least the former of these noted health-stations. There remain Malaga, Tangier, and Algiers. Of these the last only is known to the writer from personal experience, but it is without doubt much the best of the three. Equal at least to the others as regards climatic considerations, it far excels them in the advantages of beautiful scenery, objects of interest and hotel accommodation.

Algiers is charmingly situated on some rising ground—the flowery Sahel—on the edge of the great Metidja plain, and fronting the Mediterranean. Seen

from the deck of the approaching steamer its glittering mass of snow-white houses, its sparkling minarets, magnificent villas and luxuriant gardens constitute a picture that lingers long in the memory. A nearer view discovers two distinct zones in the apparently confused mass of houses—a French district lying along the edge of the sea and an Arab district rising on the slopes behind. The former portion with its fine boulevards and handsome shops recalls Paris or Marseilles, while the latter exhibits all that irregularity and intricacy of structure and arrangement which are characteristic of Eastern cities. There are several handsome suburbs—especially the Village d’Isly, Mustafa Supérieur and Mustafa Inférieur—occupied chiefly by scattered villas lying on the sides of the hills and embosomed in groves of orange, lemon and fig.

One is immediately struck with the brilliant sunshine, the luminous air, the gay life, and the multiform interest of Algiers. In the streets the Arab, the Kabyle, the Turk, the Moor, the Jew, the Spaniard, the Italian and the Frenchman mingle in a ceaseless stream of diversified humanity. The variety of costume, complexion and language, is inexhaustible, and stimulates the interest of even the depressed and the ailing. But the climate is the chief attraction. Lieutenant-Colonel Playfair, Her Majesty’s Consul-General for Algeria, describes the climate of Algiers as the best in the basin of the Mediterranean, no small praise when we consider the claims of such

favourite sanatoria as Nice, Cannes, Malaga, Castellamare, and Palermo. But there can be little doubt that the claim of Algiers to pre-eminence is well-founded. The consumptive who pauses on the northern shore of the Mediterranean is still within the range of winter cold, of frost and fog. He *may* enjoy almost uninterrupted sunshine, but if so it will be by favour of an unusually fine season. More frequently he will have his share of cloud and rain, of morning frosts and of cutting blasts. But let him cross the Mediterranean, and at once he is in a land where winter in our sense is unknown. Snow may glitter on the distant peaks of the Atlas mountains, but along the seaboard it never descends to the plain. Fog has scarcely any significance to the Algerian. With rare exceptions, the winds are balmy and benign. During the winter months four days out of five are rainless, and a day of continuous wet is a rare phenomenon. Usually the rain comes suddenly and descends with great force, but the clouds have hardly passed away before the thirsty earth has sucked up every drop of moisture and the dust is flying in clouds as before. The total rainfall for the year is about twenty-nine inches, and it ranges from a maximum of five inches in December to a minimum of *nil* in July. Evaporation is very active. During the seven winter months of 1878-79 there were only twenty-nine days upon which rain fell or wind blew, and only a single day on which invalids found it impossible to venture out of doors. Although the



fine weather is so constant and the atmosphere so radiant, extremes of heat are unknown between November and April, the thermometer only exceptionally exceeding 70°. The average winter temperature might be compared with that of a fine September in England, but the humid atmosphere of Britain lacks the luminous splendour, the airy lightness, and the stimulating properties so characteristic of the Algerian climate. No cold winds like the *Mistral* or the *Bise* attack the sojourner in Algiers, nor has he to marvel at the contrast between the brilliant sunshine and the piercing wind. If he saunters out without his overcoat, he does not bring pleurisy or rheumatism home with him, as the penalty of his neglect. The winds are usually soft and mild, but occasionally a keen blast descends from the Atlas mountains, or more rarely the influence of the sirocco brings unwonted languor and depression.

The winter climate of Algiers presents a certain amount of diversity, and the visitor is almost sure to be told that he is having an exceptional season. Seasons at health-resorts are always "exceptional." One wonders how averages are constructed. At Algiers the diversity of season applies mainly to the rainfall, which is variable in amount and unequally distributed among the winter months; but the range of temperature and general climatic conditions are those of equability. An idea has prevailed that a sudden fall of temperature at sunset constitutes a peculiar danger of Algiers. It is undoubtedly true

that in warm climates there is often a chilliness in the air just after sundown ; but Algiers has no exceptional disadvantage in this regard, the transition from the day to the night temperature having only that abruptness common to all sub-tropical lands. Invalids are rightly advised to avoid exposure at this hour, but, on the other hand, nothing can exceed the balmy softness of the Algerian night. From his villa on the heights of Mustafa or the Village d'Isly the visitor has nightly a scene of infinite beauty spread out before him. The bay, the distant Atlas peaks, close at hand the city so curiously combining the architectural features of Orient and Occident, around him villas and gardens and shrubberies—all combine to produce a picture which few sanatoria can rival.

As regards the incidence of consumption in Algiers, Hirsch says : “The more recent observers are agreed that phthisis is comparatively rare among the French, both civilians and military ; while among the native population, and particularly among those living outside the town, either occupied in agriculture or leading a nomadic life, it is still less frequently met with.”

Yet, in spite of its climatic advantages and other attractions, the town of Algiers cannot be unhesitatingly recommended to the consumptive. Like all Eastern cities its sanitary condition is far from satisfactory, and the almost tideless Mediterranean does not facilitate the slender efforts put forth in the

matter of drainage. Evil odours assail the sense in all the chief thoroughfares, and are not unknown in the hotels and dwelling-houses. Destructive epidemics are not rare among the native population. The water supply is not above suspicion, but it is right to add that there is no unusual prevalence of typhoid fever. Dust is a constant and serious annoyance. Add to these drawbacks the cardinal fact that large centres of population are so unfavourable to phthisis, and we shall see reason to dissuade the consumptive from any lengthened residence in the city of Algiers. There remain the suburbs and the adjacent country. Mustafa is a charming district, and free from many of the drawbacks of the city. It has many good villas and *pensions*, but the hotel accommodation is still inadequate. On the whole, it seems clear that the districts of the interior of Algeria offer superior advantages to any littoral region. They are less troubled with dust, and less obnoxious to the charge of mal-hygiene. On the slopes of the Atlas mountains are numerous spots which offer exceptional advantages as sanatoria for phthisis, but for the most part they are still unknown and undeveloped. Hamman R'Ihra, about sixty miles distant from Algiers, at an elevation of 2,000 feet, has hot springs which were known to the Romans, and is now provided with an excellent hotel. It is a very quiet spot, but the neighbourhood is picturesque and the walks and drives are numerous

and beautiful. In the same neighbourhood is Milianah, beautifully situated on a plateau 2,400 feet above sea-level. Close at hand is the Zakkar mountain, whose summit, 5,000 feet high, commands splendid views of the plain of the Chelif. As more correct views regarding the climatic treatment of consumption gain ground, and above all as the unwisdom of consumptives choosing large centres of population for residence becomes recognised, there can be little doubt that Hamman R'Ihra, Milianah, and similar resorts of which Algeria may hereafter furnish an inexhaustible supply, will entirely supersede the capital. Visitors to Algiers now occasionally resort to Hamman R'Ihra for the months of March and April, but the idea prevails that the latter sanatorium is unsuited for a winter residence owing to its elevation and consequent lower range of temperature. The gravity of these drawbacks, if such they can be called, has probably been much overrated.

It remains to consider for what classes of consumptives Algeria is suitable. It is easier to say what class of cases should be prohibited from resorting thither, chief among whom are patients of the irritable nervous type and those who suffer from hepatic derangement. To the former class the climate, with its brilliant sunshine and stimulating atmosphere, is too exciting ; while the heat, doubtful water supply and consequent free use of wine, are

apt to aggravate liver troubles. Visitors to Algiers sometimes get injury from dropping too readily into the French habit of sauntering into *cafés*, and drinking strong black coffee frequently and at unseasonable hours. The cheapness and excellent quality of the tobacco is a snare to others. The maximum of advantage is probably attained by consumptives of relaxed fibre and "lymphatic" temperament (if we must retain so objectionable an expression), who are free from nervous irritability, severe pyrexia, or grave digestive derangement, and who are likely to react to the stimulus of the climate. Senile patients who have been strictly temperate livers are likely to do well at Algiers, but it is most unsuitable to elderly people who have been devoted to the pleasures of the table.

Among the minor, but still most important, advantages of Algiers must be reckoned the variety and excellence of the food. Vegetables are extraordinarily abundant and of fine quality, even in mid-winter. Green peas, cauliflower, spinach, &c., can be enjoyed in perfection even at Christmas. Fruit is varied and excellent. Game can usually be obtained both cheap and good. The Algerian quail is of unsurpassed flavour. The quality of the meat is hardly satisfactory to the British palate, but this is less the fault of the country than of the French cook, who thinks too much of her sauces and too little of her beef and mutton. The fish are

for the most part brilliant impostors—gay without, tasteless within—but this is a disadvantage which Algiers shares with all places in the warm latitudes.

It would be a step in advance if, in recommending this favourite health-resort, we were to speak not of Algiers, but of Algeria.

## CHAPTER XII.

### SOUTHERN FRANCE.

THE health-resorts of the South of France are among the best-known and the longest established sanatoria for consumption. In the infancy of the science of comparative climatology, the meteorological conditions of this region seemed brilliant and benign in comparison with those of Britain, and hence arose the very exaggerated estimates placed by a past generation upon Pau, Nice, and Montpellier. But the growing recognition of new sanatoria, such as Algeria and Morocco, where fine weather in winter is not merely a probability but a certainty, the increasing mass of meteorological facts and the accumulation of statistics regarding the results of treatment have relegated the South of France to a subordinate position among the health-resorts for consumptives. Montpellier has quite ceased to be mentioned in this connection, and would probably be quite forgotten by the British public, were it not for the innumerable terraces and



esplanades which took their names from it when it was in the zenith of its fame. Pau was a great favourite with the older practitioners, though it is somewhat difficult to see on what grounds. The climate is humid, relaxing, and sedative, likely to be beneficial in some cases of nervous irritability, but unsuited for consumption. Its depressing effect upon the heart is in some cases remarkable, and persons of feeble circulatory vigour should on no account be sent thither. The scenic attractions of Pau have been much exaggerated, the distant view of the Pyrenees, which figures so largely in advertisements, being destitute of much real beauty or grandeur. There is excellent accommodation, but the place has the depressing air of decay and fading popularity. When the writer visited Pau, he found the grass growing in the squares, and the vast array of monster hotels, coupled with the general air of declension, afforded melancholy proof that the former popularity had vanished, probably for ever. Biarritz and Arcachon have some genuine attractions, which secure them continued favour. The former has a mild and equable, but tonic, climate of decidedly marine quality. Its great drawback is the undue prevalence of wind. Arcachon has ample shelter, abundant pine forests, and a dry soil. It is the Bournemouth of France, and the climate is mild, equable, and humid. It suits cases of consumption where much shelter and generally soothing conditions are a desideratum, but should be only excep-

tionally chosen in preference to the more tonic sanatoria.

The Riviera demands a more detailed notice, including as it does the most famous health-resorts in the world. The fame of Nice, Cannes, Mentone, Hyères, and San Remo, is world-wide, and has received the stamp of rank and fashion even more unreservedly than the impress of medical authority. As the literature of the subject is already ample, we shall deal with it more briefly than its importance would seem to demand.

The Riviera is probably the most beautiful marine region in the world. Nothing can exceed the loveliness of this strip of flowery coastland, with its jutting crags and circling bays, bounded on one side by spurs of the Alps, and on the other by the Mediterranean, now glittering in brilliant azure, again ruffled into sapphire by the breeze. Art has done its best to rival and supplement Nature. Gardens of rose where the nightingale sings, forests of lemon and orange, magnificent hotels, villas scarcely less magnificent, every luxury of civilisation which taste can devise or money supply—such are the attractions which the Riviera can offer beyond any other region. As regards climate, however, our praise must be tempered with much qualification. Many seasons are undoubtedly charming, but others are most disappointing, especially towards the end of the winter and the commencement of spring. There is no such certainty in the winter climate as may be

had in Algiers or Morocco. Frost is frequent at night and in the early morning, and snowstorms are by no means unknown. But the grand defect of the climate is the frequent prevalence of cold winds. The casual visitor to the Riviera is alternately regaled with laudation of the sunshine, and lamentations regarding the *Mistral*. This is a sharp, biting, dry wind, blowing from the north-west, and prevailing frequently in spring. It is trying even to the healthy, and undoubtedly pernicious to the consumptive. The *Mistral* is the more dangerous inasmuch as it springs up suddenly and blows violently even when the sun continues to shine with undimmed lustre. This deceptive combination of brilliant sunshine with cutting blasts (reminding the English visitor of March at home) is the great climatic defect of the Riviera.

It will be evident from the foregoing description that shelter, so frequently emphasised as a necessary characteristic of a really good health-resort for consumptives, is peculiarly indispensable in the Riviera. Of its various stations, Mentone is beyond comparison the most sheltered, and its superiority to its rivals has been much insisted on by various writers. In certain cases, especially where there is an irritable bronchial mucous membrane and an intolerance of wind, this superiority is beyond question. But Mentone is depressing to some invalids on the very ground—viz., shelter and consequent atmospheric quiet—which renders it grateful to others; and it is currently re-

ported to be rather more exposed than its neighbours to that form of low "coast" fever which is occasionally prevalent along the littoral of the Riviera. Of this last fact the writer has no definite proof, but it is commonly alleged by the inhabitants of Cannes, who advance their superior water supply and greater immunity from fever as a set-off to their admitted inferiority as regards protection from winds.

San Remo has probably the best climate in the Riviera. Somewhat less sheltered than Mentone, it is drier, warmer, and more equable.

Cannes possesses a splendid site, almost unequalled natural beauty, and the most ample and excellent accommodation. It is the favourite British colony on the coast of the Riviera. It lacks shelter, however, and the climate is less equable than that of Mentone or San Remo. It has a peculiarly exciting action, and hence is unsuitable to nervous constitutions. Cases in which there is hysteria, neuralgia, or other nerve-ailment, are injuriously affected by the climate of Cannes.

Nice resembles Cannes, but the climate is still more lacking in equability, and its exposure to winds is even more marked. Nice has almost entirely lost its once great repute as a sanatorium for consumptives, although it still retains a high popularity as a resort of fashion.

The Riviera has received a prolonged and thorough trial in consumption, and the results are familiar to the members of the medical profession. Undoubtedly,

where proper precautions are used and a prudent manner of life followed, marked temporary improvement has ensued in a considerable number of cases, But few authorities report many cases of cure; and it is certain that inflammatory complications are unduly frequent among consumptives during their residence in the Riviera. This liability to bronchitis, pleurisy, &c., which besets the consumptive in Nice or Cannes, is the result partly of the instability of the climate and the prevalence of cold winds, but in large part also of the gay life commonly pursued, and the numerous incitements to perilous amusements. The gaieties of the Riviera are amongst its most serious drawbacks to the consumptive. Undue excitement, heated and crowded rooms, over-exertion, and late hours—the usual accompaniments of life at the fashionable sanatoria—are, it is hardly necessary to say, in the last degree noxious to the sufferer from pulmonary disease.

Experience shows that the earlier portion of the winter is usually much more favourable upon the Riviera than the later. Cold winds are much less frequent, and the average of fine dry weather is higher. Probably in time Mentone, Cannes, and San Remo will come to be regarded less as winter than as autumnal sanatoria; and so regarded they may fulfil a very important function in the climatic treatment of disease. A residence of two or three months in the Riviera, followed by a removal about Christmas to Algeria, Morocco, or Egypt, would form a winter pro-

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gramme, combining a most agreeable variety with some utility. Again, Marseilles and Naples are now two of the most important ports of departure for Australia ; and the consumptive who decides on resorting thither may (as elsewhere hinted) prudently spend the earlier half of the winter in the Riviera, timing his departure so as not to arrive in Melbourne or Sydney until the worst heat of the Australian summer is passed.

## CHAPTER XIII.

### THE HOME SANATORIA.

THE growing popularity of the many foreign resorts for consumptives has in recent years driven the home sanatoria into the background. Where means permit, and inclination leads the way, the medical adviser now thinks of Algeria, Egypt, or Australia, for a consumptive patient, whom the practitioner of the preceding generation would have sent to St. Leonards or Ventnor. It may be questioned whether the pendulum has not swung too far, and whether the present disposition of professional opinion is not rather to underrate the facilities afforded by the British Islands for the climatic treatment of consumption. The notion that the climate of this country is highly promotive of the disease and strongly inimical to its cure has sunk deeply into the public mind, and the first idea which now occurs to the invalid who finds himself the victim of incipient consumption is usually to escape as quickly as possible to brighter and presumably



healthier climes. If we accept the view put forward in this volume, viz., that the influence of climate upon consumption is indirect rather than direct, that a climate such as that of England, with a long variable and rainy winter, injures the consumptive, not by anything that can be termed a specific action, but rather by interfering with outdoor life, by curtailing exercise and pleasure, by necessitating a prolonged residence in artificially-heated apartments, and hence lowering nutritive and nervous tone; it will be evident that, if circumstances compel us to fight the disease at home, we must not imagine that climatic treatment is thereby rendered hopeless or inapplicable. There is a wide variety of climate within the limits of the British Islands, and much may be accomplished in consumption by a judicious change of locality—according to season. It is true our climate presents some special difficulties as regards the successful carrying-out of the leading principles of the treatment of consumption. Speaking generally, it is too variable for the consumptive, and has an excess of wind and a deficiency of sunshine. The dampness, to which popular opinion attributes the major portion of the mischief is, as we have seen, of itself comparatively innocuous, but combined with other meteorological characters it has a prejudicial influence. Our long winter, with its uncertain frost and snow, and too certain rain and fog, is necessarily trying to the consumptive, and our spring—so often characterised more by biting east winds than by the

brightness and geniality which the poets attribute to it—presents even greater dangers. But in spite of all these disadvantages, which are oftener exaggerated than minimised, many patients elect to winter at home, and leave no option to their medical adviser. Some dread and dislike the idea of foreign travel, others are prevented from contemplating distant journeys by financial reasons, or the impossibility of obtaining suitable companionship ; others, again, are physically unfit to encounter the fatigues and risks incident to removal to distant regions. In all these cases, and they are very numerous, the medical adviser must be prepared to consider the climatic resources of the British Islands. It may be objected that where circumstances prevent resort to foreign travel, the patient had better remain at home. In a large proportion of cases this view would certainly be short-sighted and erroneous. Granted that consumption is oftener due to an improper mode of life than to any climatic defect, it is nevertheless most true that climatic change is one of the surest aids to the adoption of a healthier manner of living. We are the slaves of habit, and while we remain under the conditions in which evil habits have been formed, we find great difficulty in abandoning or modifying them. Hence is probably explained the fact which has struck all observers that in most chronic affections, and pre-eminently in consumption, change simply as change is usually beneficial.

If the sanatoria of the British Islands have some

admitted defects from the meteorological point of view, they also possess certain compensatory advantages. The accommodation is in most cases excellent, and far beyond the average of foreign health-resorts. The patient can have the food and the cookery to which he is accustomed. Sanitation may be imperfect, but in most cases is attended to with a thoroughness that is still unintelligible to the foreigner. Lastly, the invalid is free from many of the worries which are apt to assail him in foreign countries, and has not that sense of distance from home and separation from friends which many sufferers find so distressing. These considerations help to reconcile us to treating at home many cases which our first inclination would lead us to order abroad.

The chief sanatoria in the British Islands for the treatment of consumption are—

*A. English—*

Ventnor, Bournemouth, Torquay, St. Leonards,  
Hastings, Penzance, Grange.

*B. Scotch—*

Rothesay.

*C. Irish—*

Glengarriff, Queenstown, Rostrevor.

Ventnor claims a priority of notice, both on account of its inherent merits and as the site—wisely chosen—of the National Hospital for Consumption. Facing full south, completely sheltered on the north by the

downs of the Isle of Wight, and resting on a dry and porous soil, Ventnor is one of the driest and sunniest places in the British Islands. The air is wonderfully soft, and the strong marine influence conduces to a high degree of equability. The lack of adequate shelter from the east winds is the only serious drawback. The amount of sunshine is very great for England, and, as recently pointed out, does not fall much short of that enjoyed at Davos-Platz. The National Hospital for Consumption is charmingly situated and admirably administered, and the results of treatment there have been highly satisfactory.

Bournemouth on the Dorset coast has rapidly attained the proportions of a sanatorium of the first order. Situated on the banks of the little streamlet, the Bourne, and extending along the neighbouring pine-covered moors, it enjoys much shelter and warmth, and all the advantages of a dry sandy soil. It has more perfect shelter with less sunshine than Ventnor, but its most essential point of distinction from the Undercliff is the absence of any decided marine quality in the air. At Ventnor the sea is the most potent factor in the climate. At Bournemouth one might easily live for weeks without suspecting that the town had any claim to rank as a sea-port, so little is the marine influence perceptible in those districts that are removed from the cliffs. Bournemouth sets especial store upon its pine-forests, and even if their balsamic emanations

are less potent in pulmonary disease than some authorities would have us believe, they at least afford an unlimited choice of beautiful and secluded walks and drives, eminently suited to the needs of the invalid. The accommodation of all kinds at Bournemouth is ample and excellent.

Torquay is a beautiful spot and well sheltered. The climate is, however, too relaxing to be generally suitable in consumption.

St. Leonards and Hastings are colder, and more exposed to east winds than the sanatoria already mentioned. They are unsuited to cases of consumption in which shelter is a desideratum, but will be found beneficial to the hardier classes of invalids.

Grange, in Lancashire, has a local climate, much milder and more equable than places in the immediate neighbourhood.

Rothsay has a mild, equable, and very moist climate. The prevalence of cloud and the absence of sunshine are its chief meteorological defects.

Glengarriff has a singularly mild and equable winter climate. The arbutus blooms in the neighbourhood, and the flora witnesses to a degree of mildness unknown in other parts of the United Kingdom. The scenery is the most lovely in Ireland, and Bantry Bay, with its numberless islets, merits higher praise than has ever been accorded to it. There are two good hotels.

Queenstown has a climate resembling in its main features that of Glengarriff. It is a livelier place than

the latter, and presents more objects likely to interest the invalid.

Rostrevor is situated in a sheltered nook of Carlingford Lough, and is very well protected on the east. The scenery is agreeable, and there are two fair hotels. The village itself is a poor little place, and possesses nothing likely to attract or interest the invalid.

The above review includes only winter sanatoria, as the consumptive usually elects to spend the summer at home amongst his friends, but the British Islands afford many localities suitable for the treatment of consumption during the latter season. Malvern ranks high amongst this class. It possesses a fine situation, magnificent scenery, a fairly dry climate, and excellent accommodation. Its exposure to the east renders it a doubtful resort for winter or spring. Tunbridge Wells, an old favourite, is a warm and sheltered resort. Buxton is one of the highest and most bracing sanatoria in the British Islands. It lies at an elevation of about 1,000 feet, is cold and cloudy in winter, but is likely to prove useful in summer to those patients who can respond to a tonic quality of climate. Harrogate somewhat resembles Buxton. Both these resorts are better known for their mineral waters than for their bracing air, but it is the latter which gives them their value in the treatment of consumption. Ilkley is another resort belonging to the same class.

For winter residence the consumptive will in nearly

every case select one of the marine resorts, which are warmer and more equable at this season than the inland sanatoria. Where the choice is not restricted by personal considerations, probably Ventnor and Bournemouth offer the greatest advantages to the invalid, and the selection will turn less upon any trifling differences in warmth and amount of sunshine than upon the question whether a slight or a decided marine influence is likely to prove beneficial to the individual sufferer. If the former, Bournemouth should be chosen; if the latter, Ventnor must be recommended. The chief drawback to these sanatoria is the fact that they possess very little tonic influence, and hence do not stimulate appetite and nutrition to the same extent as more bracing localities. Upon persons in robust health both Bournemouth and Ventnor frequently exercise a distinctly depressing and debilitating influence, but the invalid often gains more by the softness of the air than he loses by its sedative effect. We have in regard to these localities the eternal paradox of the treatment of consumption, viz., how to soothe respiratory irritability without impairing digestive vigour. Bournemouth and Ventnor are believed by many competent authorities to fulfil best of any of the British resorts the happy mean of soothing cough on the one hand without unduly depressing nutrition on the other. Their influence in checking appetite is more marked in health than in disease, and varies much with individual idiosyncrasy.



These sanatoria suit the common types of consumption where there is progressive pulmonary disease and evidences of constitutional involvement. In very chronic cases, with limited and quiescent lesion and the retention of fair general vigour, Hastings or St. Leonards may be tried with advantage. They are decidedly more bracing than Bournemouth or Ventnor, and, if not found too windy or too cold, may be expected to exercise a favourable influence upon the constitutional debility found in consumption. Penzance, Torquay, and Grange should not, as a rule, be chosen, unless personal reasons render recourse to the other resorts impossible. Penzance and Torquay are even less tonic and more debilitating than Ventnor or Bournemouth, and Grange lacks the adequate amount of sunshine. Rothesay resembles Grange, but has a more decided marine quality. Queenstown and Glengariff are well worth the attention of Irish patients who prefer to remain in their own country. Rostrevor can only be recommended to those living in the neighbourhood, who are unwilling to undertake the longer journey necessary to reach more desirable sanatoria.

The consumptive who decides to winter in the British Islands must endeavour to combat the drawbacks of the climate by special attention to hygiene and domestic arrangements. He must, when practicable, have a roomy house on a dry elevated foundation and with a south front. His rooms, both for night and day use, should be large and airy, with

high ceilings, and large French windows opening both in the middle, and by a skylight at the top. Ventilation must be rigorously attended to by night and day. Gas should be prohibited and oil-lamps substituted. Fresh-air exercise daily must be enjoined, unless the weather be very bad. A covered promenade, open to the south and protected from cold winds, would be of great service for exercise during severe weather. Where this cannot be obtained, a summer-house should be erected, with a movable screen, which can be fixed at will in such a position as to secure protection from wind and rain. Carriage exercise should be freely taken if walking or riding be impracticable. By such means as these we may obtain the maximum of benefit from the home health-resorts and obviate some of their necessary imperfections.<sup>1</sup>

General experience shows that patients at the home sanatoria fare better during the former than during the latter half of the winter. It is, indeed, surprising how well consumptives often tolerate their own climate during October, November, and even December. Dry, sunny, frosty weather is not only innocuous, but indubitably beneficial to the consumptive. Unfortunately, such weather is comparatively rare in these islands, and our winter shows a heavy preponderance of fog and rain. But, while the consumptive frequently holds his own or even gains during the depth of winter, especially if there be frost, he

<sup>1</sup> See Hermann Weber's Croonian Lectures for some admirable advice on this question.

usually suffers severely in the chilly and variable weather of early spring. The parching east winds depress his already lowered vitality, aggravate cough, and tend to inflammatory complications. It is at this season that an escape to warmer climates is eminently desirable, as even Ventnor feels the east winds severely, and Bournemouth is not exempt from their malign influence.

## CHAPTER XIV.

### THE CHOICE OF CLIMATE IN CONSUMPTION.

THE choice of climate in consumption is often a matter of great difficulty. The meteorological features of the various sanatoria, admit of very precise statement, their physiological action of a statement somewhat less precise ; but when we begin to apply these principles to cases, we are beset with the difficulty of estimating that almost incalculable *quantum*—the individual response to climate. On the correct estimate of this factor, more than upon abstract and somewhat arbitrary rules, turns the proper application of the manifold resources of climatic treatment. Let us now pass in review some of the various types and stages of consumption, and endeavour to indicate their appropriate climatic treatment, always premising that the constitutional condition, and the individual idiosyncrasy must be constantly kept in view.

A.<sup>1</sup> Probably the most common type of the disease

<sup>1</sup> This is the "Chronic Tubercular Phthisis" of Theodore Williams and most other writers.

in this country, is that which begins insidiously with loss of strength, short hacking cough, and gradual failure of nutrition. Sometimes the onset is by a series of slight hæmorrhages, sometimes a complete and inexplicable failure of appetite is the first sign of danger ; sometimes the patient's earliest trouble is a little shortness of breath. In a large proportion of such cases there is a family predisposition to the disease, an imperfect development of the chest, a fine texture of skin and soft hair. On examination, the accompanying pathological condition is usually found to be disease of the lung, limited to one apex, small in extent, slowly progressive, but sooner or later going on to softening and excavation.

That a notable proportion of such cases can be, and are, cured by change of climate and altered mode of life, there can be no reasonable doubt ; and the proportion of cures effected is sure to rise steadily, as the principles of climatic treatment become more widely known, and more correctly applied. To such typical cases three of the classes of climate described are in different instances applicable, viz.—

*α.* The High Altitude Climate.

*β.* The Oceanic Climate.

*γ.* The Climate of Dry Inland Plains.

The time may come when we shall be able to assign definitely to each of these climates, its special and exclusive function, but that time is not yet. Our

present knowledge does not enable us to say that a case of consumption, which presents the features of a hopeful prognosis and is found to improve or recover on shipboard, might not have also done well at Davos, or in the Australian Riverina. In all probability there are many cases in which any of these climates judiciously employed, will effect excellent results, just as there are many other cases in which all climates will assuredly fail. We cannot lay down absolute rules to suit every case, and render the choice a matter of practical scientific certainty, but we can formulate a few general principles, and give some very precise warnings.

If the disease be entirely free from complications, if the patient's constitutional vigour be but slightly impaired, and he be still able to maintain habits of activity, if the digestion be sound and the nervous system stable, the general rule of practice should probably be to give the first trial to the climate of High Altitudes. Difficulties of distance and locomotion still combine to give the preference to the Alpine sanatoria, especially Davos and Wiesen, but there can be little doubt that the high resorts of the Andes—Bogota, Quito, Jauja, and Arequipa—offer great advantages, and are likely to become increasingly popular. In proportion as the favourable indications above enumerated are modified, or absent, does the applicability of the High Altitude climate recede. Various complications—renal, intestinal, gouty, rheumatic, &c.—entirely exclude it. Much nervous irrita-

bility is a bar to its employment. Extreme weakness and much digestive disturbance render its application doubtful and hazardous. It must always be borne in mind, however, as a point in favour of this line of treatment that, when successful, its success is not rarely signal and complete.

If, in any case of typical incipient consumption, the High Altitude sanatoria are excluded by reason of any of the points above enumerated, the ocean voyage next suggests itself, and its results are often extremely encouraging. It suits less robust cases more uniformly than the mountain climate, and is not excluded by the presence of some of the complications indicated. A considerable degree of weakness is no bar to its employment, as the patient can enjoy the full advantages of the sea-air while reclining in his easy-chair on deck, and the necessity for active exercise is much less than at Davos or St. Moritz. Digestive and nervous complications are also, as a rule, more tractable on ship-board than among the mountains. Sea-sickness rarely attacks the consumptive with severity, appetite almost invariably improves, and diarrhœa is unusual at sea. As regards nervous irritability, much depends upon the comfort of the ship, the weather experienced, and the possibility of securing congenial companionship; but it is certain that the Oceanic climate *per se* has none of that highly stimulating action which is so marked a feature in the climate of High Altitudes. The great defect of the sea-voyage is the brevity of



its duration and the relapse which so frequently ensues when the patient reaches land.

The climate of the Dry Inland Plains is not only of great utility by reason of its inherent qualities, but it has the immense advantage of being applicable in all seasons, and lending itself easily to the permanent settlement of the invalid amidst conditions of life which favour recovery. Its special indications for preference over the High Altitude and Oceanic climates are not clear, but it is unquestionable that many of the most complete cases of cure on record have been those of consumptives who have permanently settled in the interior of Australia, the Orange Free State, or other similar locality.

*b.* We have a second and less common type of consumption beginning by sudden and profuse hæmorrhages occurring in the midst of apparently perfect health, and attended by few or no local evidences of disease.<sup>1</sup> There is usually no proof of hereditary taint. These cases are well known to be among the most hopeful which come under the notice of the practitioner, and do well in many climates, but the experience of the Davos physicians tends to show that the High Altitude sanatoria are specially suited for their treatment. The exploded prejudice that the tenuity of the air at high elevations favours hæmorrhage from the lungs is now known to be quite destitute of foundation.

<sup>1</sup> The "Hæmorrhagic Phthisis" of C. J. B. Williams, Theodore Williams, Peacock, Bennet, &c.

c. A third type of consumption bears a considerable analogy to pneumonia. There is a fairly defined onset, much fever, and more or less consolidation of lung. Many of these cases run a rapid downward course, the consolidation quickly softening and excavating, and they then form the "Acute Phthisis" or "Scrofulous Pneumonia" of Theodore Williams, and the "Acute Pneumonic Phthisis" of Douglas Powell. Where the progress of the case is rapid and uninterrupted, climatic treatment is obviously impracticable, but a certain proportion of these cases rally very unexpectedly, and the destructive process in the lungs undergoes more or less complete arrest. In such cases, however unpromising they may seem, the question of change of climate may arise, and the patient may elect to try some foreign sanatorium, even if warned that the prospect of benefit is far from hopeful. It is obvious that stimulating climates are not adapted to this type of consumption, and that their adoption might tend to rekindle the smouldering embers of disease, and bring back the acute condition. Hence the High Altitude climate is clearly inadmissible, and the climates of the Dry Marine Resorts and of the Dry Inland Plains are, though in a lesser degree, inapplicable. There remain the Oceanic climate and the Moist Marine climate. The sea-voyage is of doubtful expediency in the class of cases under consideration, not from any meteorological defect, but because the long absence from home and the contingencies of distant travel

are undesirable for patients whose condition presents so little ground for a cheerful prognosis. On the whole, if climatic treatment be tried at all in these cases, the moist marine resorts, such as Ventnor or Madeira, are the most suitable, their sedative influence being important as tending to prolong the stage of quiescence of the morbid process. The prognosis in this type of consumption, always very serious, is grave just in proportion to the destruction of lung tissue and the constitutional damage effected before the lapse from the acute to the chronic condition.

*d.* A fourth type of consumption must be sharply distinguished from the foregoing, viz. cases of chronic pleurisy or unresolved pneumonia, which are threatening to become tubercular. A large proportion of such cases are free from hereditary taint, and offer most hopeful material for climatic treatment. It is in this department that the High Altitude climate has won its most notable triumphs, and the *rationale* of its action has already been sufficiently dwelt upon. Patients suffering from this type of disease should, almost without exception, be sent to the Alps or the Andes, the only necessary precaution being to wait until inflammatory action has so far subsided as to render improbable its recrudescence under the stimulation of mountain air. The results of this line of treatment are most satisfactory.

If, for any reason, the High Altitude sanatoria are unavailable or are rejected in such cases, the

Dry Marine or Inland Plain resorts may be tried. The sea-voyage is less applicable, as it tends to habits of inactivity, whereas in the cases under consideration one of the most primary requisites is vigorous exercise to promote expansion of the affected lungs.

*e.* In a certain proportion of cases in the preceding group the chief pathological feature is the invasion of the pulmonary substance by fibrous tissue. These constitute the "Fibroid Phthisis" of Andrew Clark. In such cases, if there be a fair reserve of functionally, active lung, the High Altitude climate may be tried; but if the fibroid change be far advanced, and much dyspnœa be present, better results may be expected from the Dry Marine or Inland Plain resorts.

*f.* A sixth type of consumption is afforded by those cases in which chronic bronchial catarrh gives rise to the disease, constituting the "Catarrhal Phthisis," of Theodore Williams and others. Madeira and similar moist and warm resorts, seem to afford the best results in this class.

*g.* Lastly, laryngeal consumption must be mentioned, although climatic treatment as a rule has only a palliative action. The warm, moist resorts are here the most applicable.

In the above review of the various types of consumption no account has been taken of the condition of the bronchial mucous membrane, as there can be little doubt that a too exclusive regard to its

indications has been a fruitful source of error and confusion in the past. Nevertheless, it cannot be wholly disregarded, but its importance as a clue to the selection of a suitable sanatorium must always be strictly subordinated to the signs afforded by the constitutional condition and the type of the disease. The old rule—dry climates for copious bronchial secretion, moist climates for scanty bronchial secretion—may be of value in bronchitis, but it is wholly misleading when applied to consumption. It is not a very rare event for a free bronchial secretion to cease entirely on shipboard—where the air is constantly charged with moisture—a fact which shows that no rule-of-thumb applied to the bronchitic complications of consumption can safely guide us. The maxim above mentioned has a second fatal objection, viz. that it assumes that an improvement in the character of the bronchial secretion is a gauge of progress in consumption, whereas nothing is more certain than that variations in the quantity and naked eye characters of the expectoration bear no certain relation to the course of the constitutional affection. Patients commonly delude themselves in this matter, and are unduly discouraged or elated by variations in the expectoration, but no trained observer should fall into this error.

Hæmoptysis is another symptom which cannot be safely regarded as affording any definite clue to the selection of a sanatorium for the consumptive. It has been alleged by various authorities as a reason for

excluding both the High Altitude resorts and the ocean voyage, but on no sufficient ground. The former view undoubtedly had its origin in an erroneous conclusion drawn from the well-known fact that mountaineers while making lofty ascents commonly suffer from bleeding at the nose. In drawing this analogy it was forgotten that the conditions of blood pressure at the various orifices and in the internal parts are not only different, but diametrically opposed. The diminished pressure of the atmosphere tends to increase the determination of blood to the skin and other superficial parts, but this is necessarily accompanied by a corresponding and proportionate diminution in the supply of blood to the viscera, and hence to the lungs. We should, therefore, expect that a residence at high altitudes, so far from tending to hæmorrhage, should distinctly hold it in check, and experience at Davos clearly proves that such is the fact. Many cases of ordinary "chronic tubercular consumption," in which hæmoptysis is present, while the patient resides upon the plains, obtain relief from this symptom on removal to the Alps; and, as already remarked, few types of the disease do so well at Davos as the "hæmorrhagic phthisis" of Theodore Williams. It is difficult to see on what grounds hæmoptysis has been regarded as a contra-indication to the ocean voyage. There seems no theoretical ground for such a view, and positive evidence in its favour there is none.

The degree and character of the pyrexia present is

a more important criterion than either the expectoration or hæmoptysis, and undoubtedly affords valuable guidance. Professor Jaccoud lays it down as a definite rule that where there is marked pyrexia *uncontrolled by antipyretics*, the High Altitude sanatoria are absolutely inadmissible. The Davos doctors are less emphatic on this point, but it can hardly be doubted that, while moderate pyrexia is not a contra-indication, the presence of much fever renders recourse to the mountains a perilous expedient. Such cases are not in any case hopeful material for climatic treatment, but, if it be adopted at all, the sedative resorts are the most likely to prove beneficial.

The rules that apply to severe pyrexia are equally applicable to its usual consequence, viz., marked emaciation. The presence of this symptom is always a grave element in the prognosis, and either excludes climatic treatment altogether, or confines it to the adoption of the least hopeful class of sanatoria, viz., the sedative resorts.

Ulceration of the larynx renders all climatic treatment abortive, and is usually the beginning of the end. The same remark applies to ulceration of the bowels. On the other hand, chronic diarrhœa, the result of gastro-intestinal catarrh, is often quickly cured by removal to high altitudes. This last symptom is a bar to the recommendation of Madeira, where intestinal troubles are frequent and obstinate.



Anæmia, always an unfavourable symptom in consumption, is a ground for excluding the High Altitude sanatoria, and demands the sea-voyage or some resort characterised by warmth and equability.

What guidance does the stage of the disease afford in the choice of a sanatorium? The incipient stage is, no doubt, the most favourable time for the adoption of the climatic treatment, as the local disease and the constitutional involvement are then at a minimum; but the stage of the malady is much less important than the nature of its progress and the amount of constitutional resistance present. Some cases in the third stage, with limited and stationary lesion and the retention of fair constitutional vigour, are far more favourable for treatment by climate than other cases in the first stage where the local mischief spreads steadily and the symptoms of constitutional infection are well marked. The author entirely endorses the remarks of Douglas Powell regarding the confusion introduced by attaching serious importance to the "stages" of consumption. "If these terms were strictly employed in a structural or anatomical sense as regards the lungs only, they would not be objectionable; but in fact they are too often extended in their application to the phthisis of the patient, and therefore become fruitful of error and misunderstanding. These so-called stages of the whole disease phthisis have reference merely to the effects of that disease upon, perhaps, a fiftieth part, or perhaps nearly the whole, of one or both lungs;

they have no meaning as applied to the present or prospective duration of the disease.”<sup>1</sup> If we have to define the stage of the disease most suitable for climatic treatment, we should say the quiescent, as distinguished from active, stage, rather than any of the three stages familiar to medical literature. In other words, the first and the third stages, *provided they be chronic and inactive*, are suitable, whereas the second stage, in which the morbid process is *ex hypothesi* active, is unsuitable. In this latter case it seems, on the whole, more prudent to wait until the probable extent of the softening process has declared itself. If it progress steadily and show no signs of arrest, climatic treatment is hopeless ; whereas if the process of softening is checked by the formation of a cavity the case may respond well to change of climate. No doubt this rule will hardly admit of being rigidly applied, but the general principle certainly holds good that we should discourage climatic treatment while the destructive process in the lung is in active progress.

All rules regarding the choice of climate in consumption must be qualified by the embarrassing, but necessary, admission that much depends upon individual idiosyncrasy. Professor Jaccoud says most truly : “Climatic treatment is entirely a question of individual adaptation, and the problem is to determine which residence would be most appropriate to the patient in question. When a practical trial has shown

<sup>1</sup> *Diseases of the Lungs and Pleuræ*, pp. 333—4.

that this suitability really exists, the place should be inhabited for as long a time as possible, with the view of obtaining all the benefit which such a residence can produce. This rule implies a complete revolution in climatic therapeutics, and yet what can be more natural, more simple, I would almost say, more elementary? In such cases the climate is the remedy;<sup>1</sup> if beneficial, why should it be changed? To do this would be most unreasonable." (*Pulmonary Phthisis*, pp. 315-6.)

This naturally suggests the question whether sanatoria should be chosen with the view to continuous residence, or should be changed with the changes of the seasons. The latter notion has widely prevailed and has been fruitful in mischief. The idea usually present to the mind of the consumptive is to select some resort suitable for winter, and to leave it on the approach of spring either for home or for some other sanatorium. In some cases, this is admittedly a necessity. At Algiers, for instance, or Tangier or Mogador, residence throughout the summer could not be recommended to the consumptive. But no necessity exists for leaving at the end of winter either Davos, or inland Australia or California; and it may be safely laid down as an obvious axiom that a necessary requisite of a first-class sanatorium is that it should be habitable throughout the entire year. The High Altitude treatment and the ocean voyage have the

<sup>1</sup> This statement requires some qualification. Climate *plus* changed mode of life is the remedy.

great advantage of being practically independent of season. In certain cases, however, we shall be called upon to recommend autumnal or spring resorts, to be had recourse to either preparatory to the winter residence or at its termination. In the choice of the former there is little difficulty. Biarritz and Arcachon are two favourite autumn stations for patients *en route* for the Riviera, Palermo, Malaga, Algiers, Tangier, Egypt, or Madeira. Switzerland affords many resorts that are charming until the end of October, and the shores of Como and Maggiore are delightful at this season. On the other hand, it is most difficult to recommend any good spring resort. Hermann Weber correctly observes that there are very few places that can be mentioned as possessing any special advantage at this season. The weather in March and April is so variable throughout many of the most favoured regions of Europe, that everything depends upon the character of the season and practically nothing upon the name of the month. On the whole, the safest principle is for the consumptive to prolong his stay at his winter residence far into the spring, and if possible until the time when a return home can be safely undertaken. The records of invalid travel are full of the fatalities of the spring.

Climatic treatment has undoubtedly a great future before it with regard to the prophylaxis of consumption. In no disease are the premonitory signs more evident, and it cannot be too strongly urged that change of climate should be undertaken at a time

when its success is almost a matter of certainty. In threatened or incipient cases the choice will lie between the High Altitude treatment and the ocean voyage, and both are beyond question often definitely and permanently curative. The former should be preferred in those cases where imperfect development of the chest is a well-marked sign.

The choice of climate in consumption is often, unhappily, limited by the tastes and prepossessions of the individual sufferer. One invalid has an invincible repugnance to the sea ; another cannot be persuaded to try what he considers the new-fangled notion of residence amidst the Alpine snows ; a third will refuse to go beyond the range of the post, the club or the first-class hotel. In such cases the medical adviser may be driven to acquiesce in a course of action, which he clearly sees to be open to serious objection. He will have sufficiently discharged his duty if he faithfully warns the invalid of the risks attending the line of conduct upon which he is determined.

## CHAPTER XV.

### INVALID TRAVEL.

THE consumptive who has determined to go abroad in pursuance of climatic treatment must recollect that invalid travel differs essentially from the ordinary tour for pleasure, and that the promotion of health must ever be kept steadily in view, to the rigorous exclusion of all other ends. Those who have associated much with invalid travellers know how commonly this obvious principle is ignored, and how many of the failures of climatic treatment are due to palpable errors and indiscretions. The pursuit of health and of pleasure are not absolutely incompatible; yet the two ends often conflict, and the invalid must start with the plain principle that in all cases of doubt, the former must have an unhesitating preference. He must regard monotony and *ennui* as less serious evils than perilous pleasures, and must be content to see others indulge in amusements and distractions which are barred to him.

Invalid travel differs from the pleasure tour—

*First*, in admitting of less continual change and

variety. The ordinary tour is commonly a process of rapid transition from one famous spot to another by the most rapid transference and with a minimum of delay at each. To the invalid such a process is not only impossible but meaningless. His aim is not to secure perpetual change of climate, but, having found the meteorological conditions most suitable to his condition, to abide in them so long as may be necessary. For nervous invalids, hypochondriacs, &c., the ordinary tour may possess some advantage, but it is usually wholly unadapted to the consumptive. This is sufficiently well known now that the consumptive is rarely advised to undertake the usual tour through European countries, but he is still very commonly despatched on the long journey round the world, which is merely repeating the old error on a larger scale. No doubt, the large proportion of sea-voyaging involved in a journey to the Antipodes and home is a great point in its favour, but the fatigue and hardship often invited by aimless posting through the Australasian colonies or the continent of America on the return journey frequently nullify any benefit obtained by the life on shipboard.

*Secondly*, invalid travel differs from the pleasure tour in not readily lending itself in any considerable degree to sight-seeing and the acquisition of knowledge. These prime objects of the ordinary tourist must occupy a very subordinate place in the thoughts and estimation of the consumptive, who will have little reason to congratulate himself upon having seen many famous sights and gained much curious inform-



ation if, in so doing, he has expended too much vital force, and endangered his prospects of recovery. This is a snare which continually besets the invalid when abroad, and he will need much firmness and philosophic resolution in order to elude it. Medical advice is in this matter indispensable to the consumptive, in order to enable him to secure adequate change and variety without encountering perilous risks; but, when this is inaccessible, the only safe rule is to avoid all plans and amusements which are in any degree hazardous. The pursuit of knowledge, however laudable in the ordinary tourist, must not enter seriously into the purposes of the invalid. Hours spent in chilly cathedrals, hot picture galleries, or dusty streets are fruitful of mischief to the consumptive, who reaps no adequate return in pleasure for the peril thus wilfully incurred.

*Thirdly*, it is only summing up the two foregoing considerations to state that invalid travel must not involve the fatigue and excitement which are usually necessary concomitants of the ordinary tour. These have their source in the continual change and sight-seeing already condemned, and will be avoided by the precautions indicated. The consumptive in all cases needs, not indeed inactivity, but duly regulated exercise under the most favourable conditions, with ample opportunities for rest. He can derive nothing but mischief from the excitement attending constant travel, night journeys by rail, and perpetual change of hotel—a species of wear and tear trying even to the healthy.

*Fourthly*, invalid travel demands an expenditure sufficiently liberal to secure comfort. The ordinary tourist may take pleasure in traversing continents at a minimum of cost, and a relative proportion of ease and enjoyment; but the prospects of climatic treatment in consumption are seriously impaired, if the financial resources are very limited. The invalid needs a hundred little comforts—all costing money—which the healthy traveller can dispense with, and he requires that constant and solicitous attention from attendants, which among strangers can only be secured by a liberal expenditure. The necessity for such expenditure is naturally in proportion to the serious nature of the malady, and the helplessness of the patient. Sufferers in the incipient stage, accustomed to plain living and retaining a fair amount of bodily vigour, need not abandon all hope of climatic treatment because of the *res angusta domi*. To such cases, emigration and permanent settlement in one of the Australasian colonies, offers the readiest prospect; but there must ever be kept in view the plain rule, that the occupation entered upon in the new home must be such as admits of life under healthy and normal conditions. Other patients, similarly limited in their choice by financial considerations, would do well to seek some post on shipboard. Such posts are not numerous, or lucrative, but their advantages from the health point of view are unsurpassed. Lads of consumptive tendency might advantageously be entered as apprentices in the merchant navy, provided the character of the owners, and of the captain, was

a sufficient guarantee of kind treatment, and proper attention to food and hygiene. It is a hard life, and cannot truthfully be gilded over with any of the rosy hues of the romancer, but unquestionably it affords an excellent prospect of cure for the hardier type of consumptive. Other young men threatened with lung disease, might very wisely seek the post of purser on board either steamship or sailing vessel. The position combines light and not disagreeable work, with good social standing, in connection with the grand advantage of almost constant life at sea. Young medical men, as already recommended, with actual or threatened pulmonary mischief, would do well to obtain a post as ship surgeon, remaining at sea so long as may prove necessary to complete their recovery. In these various cases we get what is the most favourable form of climatic treatment, viz., permanent employment under conditions favourable to recovery.

Of the various sanatoria for consumption, dealt with in this volume, those of the Riviera (Cannes, Nice, Mentone, San Remo, &c.), are probably the most expensive. Algiers used to be considerably cheaper, but expenses there have risen with increasing popularity. Davos is still a comparatively cheap place, excellent accommodation being obtained at the hotels for the very moderate figure of 8 or 9 francs per diem. The Engadine is somewhat dearer. South Africa is an expensive region in which to travel, owing to the primitive character of the accommodation, and the necessity of providing many things not usually included in the *impedimenta* of travel. Good introduc-

tions, however, there as elsewhere in all the British colonies, do much to increase comfort and diminish expense. In Australia and New Zealand, the average cost of living in the hotels, is about ten shillings *per diem*, but good boarding accommodation can be obtained at from 1*l.* to 2*l.* per week, and in the interior the tourist is welcomed at the houses of the squatters with a hearty and genuine hospitality, to which the home country affords no parallel. In California, the cost of living at hotels varies as elsewhere, in America from 2½ or 3 dollars, to 4 dollars *per diem*. The writer has no knowledge of the expenses to be expected at Bogota, or other sanatoria in the Andes.

*Fifthly*, invalid travel demands congenial companionship. However difficult this may often be to obtain, it is a point of cardinal importance. The consumptive, whose mental condition is often so surprisingly good, has his periods of depression, especially when in distant lands and severed from the associations of home. At such times no solace can equal that of the presence of a near relative, who shares his feelings and memories, and can best encourage his hopes and soothe his regrets.

*Sixthly*, invalid travel should include a minimum of sojourn in hotels or lodging houses, and as near an approximation as can be obtained to the conditions of home life. Theory suggests and experience proves that the invalid is happiest in mind and in the best conditions for recovery when under his own or a friend's roof, where he can have at will quiet or congenial companionship, and minute attention to his tastes and

wants. This is now so well understood that at the chief sanatoria it is becoming more and more the rule for the invalid who possesses the necessary means, to secure a villa or apartments for his own exclusive use, and make for himself as far as possible a second home. The objections to hotel life for consumptives are numerous and weighty. The food, however varied and luxurious, is food for the healthy, not for the ailing. Long formal meals in heated *salles-à-manger* are fatiguing and hurtful. There is too little rest and privacy, and too great temptation to dangerous amusements. The crowded concert-room and the dance may be patronised by the ordinary tourist, but they involve great peril to the consumptive.

Many of the difficulties of travel, which most exercise the mind of the patient beforehand, prove on experience surprisingly insignificant. He is often in great doubt regarding the clothing suitable for foreign lands, but no anxiety is necessary on this score. The dress suitable for the English summer is available, with trifling modifications, in most of the lands favoured by the consumptive, while the clothing worn in this country during winter can readily be adapted for use either on shipboard in the cool latitudes, or in lands where winter cold is to be expected. The opposite extremes are represented by Davos, on the one hand, where the addition of furs is desirable to the ordinary English winter garb, and Australia, on the other, where the lightest summer clothing only is acceptable during the major portion of the year.

The regulation of food need not occasion any real difficulty, if the patient has studied both the general principles of the diet suitable for consumption, and the modifications in those principles which experience has shown his individual case to demand. Milk, eggs, and flesh meat form the staples of a consumptive dietary, and can usually be obtained in all civilised countries, sufficient in quantity and of fair quality. Difficulties regarding the two former articles may arise on shipboard, but such progress is being made in the art of preserving food under novel conditions that these difficulties, already to a large degree surmounted, may be expected steadily to decline. In most continental countries the lean meats—especially veal—are employed in excess, and the necessary *quantum* of the oleaginous elements is usually made up by presenting fat in such forms as sausage, salad oil, &c., which are apt to be unpalatable to the English invalid. If, however, the patient can take and assimilate an adequate quantity of cod liver oil, he is independent of this difficulty. In various countries certain “diet cures” for consumption have obtained a wide repute—such as the “grape cure” and the “whey cure” in Switzerland, the “koumiss cure” in Russia, &c., and their beneficial effect is most probably attributed to the good influence of a simple diet combined with a simple mode of out-of-door life. Certain dietetic snares beset the consumptive in various countries, and against these he must be on his guard. The free use of acid wines and mineral waters in many continental resorts, the



immoderate indulgence in fruits in hot countries, the undue preponderance of flesh meat in the average Australian dietary, the imprudent indulgence in iced water in America—such errors a very slight knowledge of the dietetic necessities of his malady will enable him to avoid.

Language, as a rule, need cause little anxiety. The English and Americans, joint heritors of the Saxon tongue, are ubiquitous travellers, who pay their way well, and commonly speak no language but their own. The foreigner readily adapts himself to such good patrons, and there are few health-resorts of any importance where English is not spoken at least sufficiently well for all needful purposes. The Arab captain on the Nile boat shouting to his engineer “Go ahead” and “Stop her,” is an emblem of how the spread of civilisation and the popularising of travel has carried at least a smattering of English over so large a proportion of the globe.

If the above difficulties of invalid travel are largely visionary, there are others more substantial. The chief of these is the uncertainty of the weather. Probably most English invalids, who go abroad for the first time, much overrate alike the imperfections of their own climate and the excellence of the climate of other countries. They expect perpetual sunshine without undue heat, and forget that such a combination hardly exists. They desire warm dry days, but overlook the fact that by an invariable law such days must necessarily be followed by cool or cold nights. Knowing that the British climate is commonly re-



garded as fickle and variable, they expect a uniformity of condition in other climates beyond the law of nature. Everywhere they are told that they have met with "exceptional weather," and they are apt to resent such weather as a personal injustice. This is very unphilosophical, but it is very human. The invalid sacrifices much and pays heavily, chiefly for the purpose of securing fine weather, and he feels some resentment if the contract fails in its most important item.

An analogous source of vexation is the construction of the house in many foreign resorts. In many hot countries the chief idea in domestic architecture is defence against the torrid heat of summer—the brief and problematical cold of winter being practically disregarded. But the invalid, who seeks such countries almost exclusively in winter, is apt to suffer serious inconvenience from the thinness of the walls, the porosity of the roof, or the absence of fireplace and chimney during the spells of wet and cold which occasionally occur during the winter even in the most favoured lands.

*Lastly*, disillusion plays a not inconsiderable part in impairing the comfort and pleasure of invalid travel. It is a great, but common, error to imagine that foreign countries abound in marvels, and must continually excite our astonishment. As a plain matter of fact, few countries are so uniformly charming, so abound in cultured beauty and the accumulation of objects of interest, as the British Islands. Italy has a fairer sky and more abundant art treasures, but she

has infinitely more filth, squalor, and ignorance. Algeria has date palm and orange grove, but it is a desert compared with Kent or Devon. Many of the choicest sights of foreign lands yield their significance only to the trained eye and educated intelligence—without which the traveller may journey from Dan to Beersheba and find all barren—and the invalid has too much concern with his physical needs to devote much thought to the cultivation of intellectual pleasures. No doubt, the two ends are far from being incompatible, but there can be no hesitation as to which rightly claims priority of attention. Let the invalid, then, start with no extravagant expectations, else he will soon say with Touchstone,

“When I was at home I was in a better place.”

Let him not conceal from himself that invalid travel is really a process of expatriation, and demands a philosophic resignation proportionate to the danger to be shunned and the end to be achieved.

## CHAPTER XVI.

### CONCLUSION.

To those who admit the cogency of the arguments and the pertinence of the facts contained in the preceding chapters, it will be evident that, while the direct influence of climate, as climate, upon consumption has been greatly overrated, the sphere of climatic treatment is wide, its utility great, its prospects full of

hope. Consumption is not, indeed, curable in the sense of the advertising quack (who in these days seems to batten especially upon the patronage of the nominally philanthropic world)—curable, that is to say, by patent pillule and secret nostrum. Such announcements with which even respectable journals now daily teem, are not only the most baseless of fabrications, but the most cruel of frauds upon a helpless and pitiful class of sufferers. There is no specific for consumption ; no drug, or combination of drugs, which can be relied upon with any assurance to effect a cure. Such remedies may yet be discovered, and it would be wrong to restrict or discourage the search for them, but the hard logic of practical test and prolonged experience, proves that all past announcements that “at length an infallible cure for consumption has been discovered,” have been errors or impositions. Yet there can be no more fatal error than to regard the disease as in all its forms and stages essentially incurable. Such a view not only discourages rational treatment and stifles hope, but is in conflict with evidence which is as certain as any evidence, short of mathematical demonstration, can be. There are numbers of people in this country, who in youth suffered from hæmorrhage from the lungs, and were pronounced by competent medical authority to be “in consumption,” but who have disappointed the gloomy prognosis pronounced upon them, and have regained complete physical vigour. If we analyse such cases, we shall usually find that the first step towards recovery was the abandonment of some unwholesome

occupation, the adoption of a healthy mode of life, and systematic attention to the regulation of food, habit, and hygiene. Granted that such cases are now the exception, will any one be prepared positively to affirm that the results of treatment would not be vastly more successful, if the disease were invariably detected at the earliest manifestation, if the exciting cause were immediately withdrawn, and if there were on the part of the patient a cheerful acquiescence in that revolution of life and habit, without which there can be no rational hope of recovery?

Such cases of restoration to perfect health from incipient consumption, comparatively rare in this country, are not rare in the Australasian colonies, in California, at Davos, or among the Peruvian Andes. On this fact the claim of climatic treatment rests, but the author will have written to little purpose if he has not shown that climate *per se* is not the exclusive agent in the cure, and that to rely upon it alone to the exclusion of its indirect influence upon life and habit, is to invite failure. Many a robust and bearded backwoodsman in Australia or "rancher" in California landed as a feeble consumptive in the land of his adoption, but you may search in vain for such cases of cure among the clerks and salesmen of the warehouses of Melbourne, Sydney, or San Francisco. Half the merchants and professional men in Davos are cured consumptives, many of them indeed permanently reduced in vigour by the attack to which they have been subjected, but able to live, fulfil the duties of life, and enjoying a fair prospect for the

future. Our merchant navy contains many a man who went to sea seeking recovery from consumption, and has remained there to avoid its recurrence. In both these cases the important agent in the cure—in the former instance rarefaction of the air, together with the vigorous life of the Alpine High Altitudes; in the later an uninterrupted residence amid the wholesome influences of the sea—has been continuous, and climate and hygiene have harmoniously and effectively co-operated.

There are still some who explain all the alleged instances of recovery from consumption by the hypothesis of an error in diagnosis. According to these authorities, recovery from pulmonary disease is *ipso facto* proof that that disease was not consumption. Fortunately another kind of evidence is available to meet this objection. The records of the *post-mortem* room are full of instances of persons dying of the most diverse maladies in whose lungs are found indubitable signs of former tubercular disease, which has undergone arrest, leaving the lungs more or less permanently damaged, but in many instances perfectly competent to fulfil all the needs of the organism. These cases, so far from being mere curiosities of pathology, are comparatively common, and it is impossible to weigh their significance dispassionately without being forced to the conclusion that the incurability of consumption is a myth. The reasons why consumption, although *curable* is comparatively seldom *cured*, are not far to seek. For its cure the following conditions are nearly always

indispensable. *First*, an early recognition of the disease before there is any serious constitutional involvement. *Secondly*, a resolute determination on the part of the patient to submit to the heavy sacrifices which are necessary in order that treatment may have a reasonable chance. These sacrifices include in most cases change of occupation, a radical alteration in the mode of life, a prolonged perseverance in a rational hygiene, and suitable medicinal treatment, and in a large proportion of instances climatic change, well chosen and steadfastly persisted in. *Thirdly*, there must be cherished a reasonable hope of recovery, not the spurious *spes phthisica* of the dying consumptive, but a hope strong enough to warrant a cheerful acquiescence in the unusual sacrifices which the treatment of consumption involves. While the profession and the public resign themselves to the disheartening conclusion that the disease is essentially incurable, treatment is paralysed and failure is certain ; but a more hopeful prognosis would soon bear fruit in more encouraging results. If the consumptive be practically told to eat and drink for to-morrow he is to die, die he will, and soon ; but a better issue may often be expected if he be instructed that his disease is not incurable, though extremely difficult of cure, that much depends upon his own resolution and self-command, and that the future is not necessarily a dismal blank if he can resign himself to the sacrifices which his condition peremptorily exacts.

Climatic treatment is not a complete therapeusis, and will be only a snare if so interpreted. It is a means to an end, not an end in itself; a powerful adjunct to hygienic and medicinal measures, not a substitute for them; a channel of escape from vicious habit and abnormal mode of life, not a mysterious remedy or an unfailing specific. Much observation and inquiry are still indispensable before its sphere and precise limitations can be fixed with exactness, and the medical profession must be prepared in the future, as they have been in the past, to face much obloquy in their application of a remedy which still defies scientific precision. In this as in so many other departments of knowledge—

“Science moves, but slowly, slowly creeping on from point to point.”

We must carefully record our results, admit our failures and sift our successes. Much will be done when climatic treatment is lifted out of the region of pure empiricism and when its principles become definitely established and generally admitted. To the accomplishment of this end, the author trusts that this volume may prove a genuine, even if only an inconsiderable, contribution.



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